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## Situation and Outlook Series

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#### Report

##### Coordinator

Frederick W. Crook  
(202) 219-0610

##### Contributors

W. Hunter Colby  
Frederick W. Crook  
Francis C. Tuan  
Shwu-Eng H. Webb

##### Electronic

##### Word Processing

Beverly Payton

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## Summary

China's grain output in 1993, targeted at 445 million tons, is projected to decline from 442 million in 1992 to between 425 and 435 million because of less planted acreage and lower input use. Good grain harvests in 1990, 1991, and 1992 boosted domestic corn supplies, eliminating corn imports in 1991/92 and probably for 1992/93 and 1993/94. Corn exports for 1992/93 may reach 9 million tons and remain near this level for 1993/94. Excellent domestic wheat crops, large stocks, and changes in the grain marketing system combined to reduce imports from 15.8 million tons in 1991/1992 to 7 million tons in 1992/1993. Wheat imports are forecast to rise to 9 million tons for 1993/94. China's 1992/93 rice imports and exports are forecast at 100,000 and 900,000 tons, respectively.

China's 1992 grain output rose 1.7 percent to 442 million tons from 435 million tons in 1991. Area sown to grain decreased 1.6 percent to 110.6 million hectares. Yields rose by 3.3 percent because of more input use and better weather. Rice output increased 1.3 percent to 186 million tons, wheat was up 5.8 percent, reaching a record 101 million tons, and corn fell 3.4 percent to 95 million tons.

Total oilseed crop area for 1993 will decrease slightly because of a general decline in cultivated area. Area sown to soybeans is expected to increase because of rising prices but cotton area will likely fall because of pest problems. Oilseed output in 1992 is estimated at 32.5 million tons, down 5 percent from 1991. Drought and pest problems reduced cottonseed by 20 percent. Peanut output was reduced 10 percent to 6 million tons because of drought in the North China Plain. Soybean outturn expanded to 10.3 million tons because of a rise in area and yields. Rapeseed output increased 2.9 percent to 7.7 million tons, even though area decreased by 2.6 percent.

Despite a 3.2-percent increase in area, drought and bollworm infestations reduced cotton output by 20 percent to 4.5 million tons in 1992. The failure of government purchase stations to pay cash for cotton (IOU's were used), fear of repeat bollworm infestations, large stocks of raw cotton, and rising input prices will push growers to reduce 1993 cotton area.

Meat output was a record 33 million tons in 1992, 7 percent above the previous year and surpassed the 1995 official target of 30 million tons. Pork output rose 1.8 million tons to 26.4 million. Excellent grain and oilseed crops in 1991 and 1992 and large grain stocks will maintain feed supplies and promote continued growth in meat output in 1993.

Trade between the United States and China rose from \$25.2 billion in calendar 1991 to \$33.2 billion in 1992.

U.S. exports in 1992 advanced 19 percent to \$7.5 billion, while imports from China gained 36 percent to \$25.8 billion, leaving the United States with a merchandise trade deficit of \$18.3 billion. U.S. agricultural exports fell from \$722 million in 1991 to \$545 million in 1992, because of lower wheat shipments. U.S. agricultural imports from China increased from \$328 million in 1991 to \$379 million in 1992.

In 1993, China started reforming its input supply system. For many years, government-owned businesses delivered farm inputs, such as chemical fertilizers and diesel fuel, at low fixed prices to producers with government purchase contracts. Now, a wide variety of businesses owned collectively, privately, and by government are delivering inputs to rural areas.

A revolution is underway as Beijing revamps its urban grain and oilseed marketing system from central plans to open markets. Most provinces have ended the urban grain ration coupon system and citizens now purchase from local open markets. Government-owned "Grain Bureaus" are being reorganized into program units to support government policy, such as disaster relief, and other parts organized as business profit centers to compete in markets.

Newly published data from China suggest grain stocks for 1990 were 491 million tons, compared with a USDA estimate of 82 million tons. Grain storage building programs, reports of 120 million tons of state controlled stocks, and large on-farm stocks indicate that China may have larger stocks than previously estimated.

The State Statistical Bureau reported 1985 cultivated land at 96.8 million hectares, but because of substantial underreporting the real number may have been as high as 139.7 million. This underreporting may mean that grain and oilseed output was higher than previously reported. Or that yields were lower, which suggests that with improved seed varieties and more chemical fertilizer use China could feed its expanding domestic livestock industry and maintain exports in the 1990's.

China's rural economy experienced phenomenal growth in the 1980's and early 1990's, bringing rapid increases in living standards. But this growth was uneven, with coastal provinces expanding at very high rates while interior provinces struggle. After a decade of reform, the gap between rich and poor areas has widened. Developing infrastructure and establishing better investment environments, such as financial services and communication networks in rural areas, are urgently needed for future inland growth, otherwise political bonds in the country will be strained.



# China's Economy Continued To Expand

*Three successive years of healthy growth and the government's decision to deepen reforms could prepare China to achieve rapid economic growth in the 1990's. Although inflationary pressure is rising, a repetition of hyperinflation when prices rose over 25 percent in the fourth quarter of 1988 compared with the same period in 1987, is unlikely. Improvement in the quality of goods and services from markets contributed to price increases. A substantial increase in fixed investment may add inflationary pressure but will also sustain rapid economic growth. [Shwu-Eng H. Webb]*

## GNP Growth Rate Up in 1992

China's 1992 gross national product (GNP) reached 2.4 trillion yuan (US\$434.4 billion), a real increase of 12.8 percent from 1991. In contrast, the real rate of GNP increase was 7 percent in 1991 and 5 percent in 1990. Growth in 1992 also exceeded the 8-12 percent levels of the 1984-88 period. Positive developments in 1992 included healthy growth in agricultural output, a rebound in retail sales, a reduction in inventory and, despite decontrolling or raising a number of important retail prices, only relatively modest increases in the retail price level and general cost of living. Per capita GNP was 2,055 yuan (US\$373) in 1992, exceeding 2,000 yuan for the first time.

However, continued subsidies for state enterprises consumed 14 percent of the government's budget (1). This does not include indirect subsidies through unpaid bank loans, which increase the money supply and add inflationary pressure. To prevent a repeat of the high inflation rate in 1988, China's government needs to pursue much tighter monetary and credit policies and place hard budget constraints on state enterprises (table 1).

China's state budget accounting procedures differ from standard Western procedures because they include domestic and foreign debt as revenue, exclude repayment on these debts from expenditures, and treat enterprise-loss subsidies as a revenue offset rather than as an expenditure. Therefore, China's true 1991 central budget deficit may be at least 65 billion yuan, more than three times the official figure of 21 billion yuan. However, even the higher deficit figure is still relatively low compared with the majority of other developing economies, at 3 percent of GNP.

The central government still finds it difficult to collect tax revenues from collective and individual enterprises. As China's economy changes from a centrally planned system to a market-oriented one, a much greater share of national income will come from the private sector. China urgently needs to reform its financial, legal, and tax systems to tap revenue from the private sector. State revenue as a proportion of GNP declined from 34 percent in 1978 to less than 15 percent in 1992. Loss-generating state enterprises and the urban food subsidy system also are a drain on the central budget. These problems require fundamental price,

subsidy, bankruptcy, and labor reforms. Responding to these problems, the government began to raise retail grain prices in 1990. Sugar rationing was completely eliminated in late 1991. And over the last several years, state-owned enterprises have come under increased pressure to operate profitably or face closure. Despite these steps toward reducing government outlays, additional reforms are urgently needed.

China's 1992 gross value of industrial output (GVIO), in constant value terms, grew at a rate of 20.8 percent, up from a previous high of 14.2 percent in 1991 and 7.6 percent in 1990. In 1992, the growth in the value of state-owned enterprise output was far below that for collective, individual, or foreign-owned operations. In 1992, value of industrial output from nonstate sectors increased to 61 percent from 53 percent in 1991. Coastal areas of Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi, and Hainan accounted for 61 percent of value added in the industrial sector in 1992.

After 3 years of consecutive decline, state enterprise profits finally posted a positive return to capital of 2.1 percent, which was much lower than the ongoing interest rate of 6 percent in 1992. A large proportion of bank loans went to

Table 1--China's yearend macroeconomic indicators, 1992-93

Indicator	Units	1992	1993 <sup>F</sup> Plan
Population,	Million	1,171.7	1,188.0
GNP growth <sup>1</sup>	Percent	12.8	8.0-12.0
GNP	Mil. yuan	2,398.8	2,638.7
Change in CPI	Percent	5.4	15.0
Currency in circulation	Bil. yuan	403.6	500.0
Total state revenues	"	419.0	435.0
Total state expenditures	"	443.0	473.0
State budget deficit	"	24.0	18.0
Fixed asset investment <sup>2</sup>	"	760.2	800.0

<sup>F</sup> Numbers for 1993 are PRC's targets

<sup>1</sup> GNP growth in constant value terms. <sup>2</sup> All sources.

Sources: 1992 Statistical Communique and 1993 Statistics Abstract.

state enterprises without interest and were never repaid. As a result, many of China's state enterprises absorbed large amounts of government budget and remained unprofitable because of inefficient operation and the poor quality of goods produced. In 1992, about half of bank loans went to state enterprises to produce outdated goods and contributed to huge stockpiles of unsold inventories (1).

The gross value of 1992 agricultural output (GVAO) grew 4 percent in constant value terms, compared with 1991's 3 percent and 1990's 7 percent. Grain production increased 1.7 percent from 1991, but cotton outturn declined 21 percent and oilseed output declined slightly. Sugar crops, flue cured tobacco, tea, and fruit rose above 1991 levels to raise overall crop output. Measured in constant value terms, forestry, animal husbandry, sideline products such as handicrafts, and aquatic output growth also improved over 1991, though the rate for forestry products was down (table 2).

The rural economy, including both the agricultural and non-agricultural sectors, increased 28 percent in 1992 from the previous year. The total output value of the nonagricultural sector as a share of total rural output also reached 64 percent, up from 57 percent in 1991. The output value of the rural nonagricultural sector has risen dramatically since reforms were introduced in 1979.

### Retail, Industrial, and Government Purchasing

Retail sales growth after adjusting for inflation was 9.8 percent in 1992, up 15.7 percent from 1991. The value of total rural market sales rose 13.8 percent, while urban market sales rose 18.9 percent. Sales of agricultural inputs to peasants increased by 9.5 percent. State-owned enterprises continued to be the major supplier of retail goods accounting for 41 percent of retail sales. Retail sales from state-owned enterprises increased 20 percent in 1992. For China's marketing reforms to be successful without the

Table 2--Industrial and agricultural output value, 1990-92<sup>1</sup>

Sector	Units	1990	1991	1992
Total industry	Bil. yuan	2,392	2,823	3,411
State sector	% change	2.9	8.4	NA
Collective sector	"	9.1	18.0	NA
Private sector	"	21.6	24.0	NA
Total agriculture	Bil. yuan	766	816	846
Crops	% change	8.3	0.9	1.2
Forestry	"	2.2	7.8	2.7
Animal husbandry	"	5.9	6.1	6.1
Sideline products	"	3.4	1.8	8.9
Aquatic	"	6.7	6.7	9.5

<sup>1</sup> Total industry and agriculture values are calculated on the basis of current prices, while growth rates are calculated on the basis of comparable prices.

Sources: 1989-92 Statistical Communiques; 1993 Statistics Abstract.

fear of inflation, bonuses need to be linked with productivity to make state enterprises more competitive.

In an effort to reduce the subsidy burden on its budget, the government raised prices in late 1991 and 1992 for a number of state-controlled commodities and services. Prices were raised substantially in urban areas for crude oil, finished oil products, rolled steel, pig iron, railway freight transport, and grain and edible oil. Retail prices averaged only 5.4 percent higher in 1992 because of adequate supplies of consumer goods and key agricultural commodities.

China's overall cost of living index (including consumer goods and services) rose 6.4 percent in 1992, 8.6 percent for urban residents and 4.7 percent for rural residents. However, the cost of living index in the 35 largest cities gained 11 percent as urban prices for grain rose 24 percent, fuel 15 percent, and services 13.4 percent. Some of the price increase can be attributed to the better quality of goods and services purchased from the open markets.

China's official customs statistics for 1992 indicate total trade and agricultural trade surpluses for the third year in a row (table 3). Total value of 1992 exports rose 18 percent. Imports increased 26 percent, but growth would have been higher if not constrained by government restrictions such as limiting import licenses and high tariff rates. By expanding into new markets, particularly in Asia and Europe, China was able to maintain export growth in 1992 despite slow economic growth in the United States, one of its largest trading partners. China's total foreign exchange reserves increased by 6 percent to 45.2 billion. Agricultural imports increased 43 percent while exports increased 45 percent in 1992. China's total and agricultural trade sur-

Table 3--China's foreign trade indicators, 1990-92<sup>1</sup>

Item	1990	1991	1992
US \$ billion			
Exports:			
Total	62.06	71.91	85.00
Agriculture	9.77	10.55	15.26
Agriculture's Share (%)	15.7	14.7	17.9
Imports:			
Total	53.35	63.79	80.60
Agriculture	5.47	6.07	8.65
Agriculture's Share (%)	10.3	9.5	10.7
Balance:			
Total <sup>2</sup>	8.71	8.12	4.40
Agriculture	4.30	4.48	6.61
Foreign exchange reserves	28.59	42.67	45.23
Avg. exchange rate			
Official rate	4.783	5.323	5.515
Swap market	7.429	7.773	7.834 <sup>3</sup>

<sup>1</sup> Trade data is calendar year and on an f.o.b. basis.

<sup>2</sup> Numbers in parenthesis are negative. NA means not available.

<sup>3</sup> Note that in early 1993 the Swap market exchange rate ranged from 8 yuan to 10.96 yuan for 1 US dollar.

Sources: China's Customs Statistics and IMF Statistics.



pluses were aided by small currency devaluations as the government tried to align the official and swap market exchange rates (swap markets are government-sanctioned foreign exchange markets with a partially floating rate).

### 1993 Macroeconomic Outlook

China's economic growth rates over the last 2 years were higher than the 6 percent targeted in the original eighth 5-year economic plan (1991-1995, table 1). Consequently, in early 1993, the government-adjusted official 5-year plan targeted annual average real GNP growth to 8-9 percent. GNP growth during the first quarter of 1993 was 14.1 percent contrasted with 1990's 13 percent. Inflation in the first quarter rose at an annualized rate of 15.7 percent from 5.4 percent in all of 1992. Fueled by rapid industrial growth and high levels of institutional and enterprise spending, 1993 inflation is expected to rise substantially from 1992 levels, perhaps as high as 15 percent. The 1993 surge reflects early government decontrol of a wide range of commodities in late 1992. Still the likelihood of a return to hyperinflation in the fall 1988 is small.

Several factors contribute to the confidence of avoiding high inflation rate. Substantial increases in capital investment to reduce the transportation and infrastructure bottlenecks will sustain economic growth. Artificial price hikes created under the double-price system in the mid-1980's are now nonexistent. Deeper marketing reforms will enhance competition and continue to put pressure on prices and quality to be competitive. Real GNP growth in 1993 will likely fall between 8 and 12 percent, assuming no major shifts in government economic and political policies.

During the first quarter of 1993, GVIO rose 22.4 percent from the same period in 1992 and 20.8 percent above all of 1992. The private sector contributed a large share of the GVIO growth. For the first quarter of 1993, the value of output from rural industries rose 77 percent over the same period in 1992. Output from foreign-funded enterprises rose 64 percent, collective enterprises 42 percent, and state enterprises 9 percent. Industrial investment grew 30 percent over the first quarter of 1992. Because of increasing economic autonomy, local government investments increased by 81 percent over the same period of last year. In the first quarter of 1993, the state-owned heavy industry sector output value increased 20 percent over the same period in 1992. GVIO growth for 1993 is expected also to rise nearly 20 percent. GVAO in 1993 will likely decrease because of lower output of grains.

In addition to rapid GNP and GVIO growth during the first quarter of 1993, China's inflation rate also began to rise. The general retail price index grew 8.6 percent over the same period in 1992 (2). The cost of living in China's 35 largest cities grew by 15.7 percent. The total value of retail sales during January-March of 1993 rose 14.7 percent over that 1992 period (2), while real urban incomes grew 5 percent and rural peasant incomes 10 percent. The pressure is coming from sharp increases in fuel costs, railroad freight fees, and urban grain and edible oil prices. Additional upward pressure will be generated by the gov-

ernment's planned high levels of spending on capital and subsidies for the bureaucracy, the military, and the education sectors. Despite serious deficit problems, the 1993 government budget calls for a 20-percent increase in overall spending.

The outlook for 1993 is for continued growth in both agricultural and industrial sectors. Inefficient, money-losing state enterprises will continue to be the single biggest economic problem facing government decisionmakers in 1993. The burden of the urban subsidy system has been substantially reduced over the last 2 years, and the government will likely continue to reduce its remaining price subsidy for grain and edible oil consumption to urban residents and rural state employees.

Although consumer demand rose in 1992 and should do so again in 1993, state-owned commercial operations will be squeezed and could face heavy losses by the remaining retail price controls and market-driven farm-gate or factory door prices. In addition, many commercial enterprises still have large amounts of unsold, and in some cases unsalable, inventories. Until most industrial and commercial enterprises are required to operate on a profit basis or face bankruptcy, China's industrial sector will be dogged by the problems it now faces. These include debt-ridden state industrial and commercial enterprises, large inventory stockpiles, mounting government debt, and inefficient use of inputs (both labor and capital). The government has taken several important steps over the last couple of years to liberalize producer and consumer prices. China must continue to reduce heavy dependence on state ownership to maintain growth.

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## Agricultural Trade Increased in 1992

*China's 1993 total value of agricultural trade is expected to grow at a slower pace than last year's 44 percent. China's exports of corn expanded from 3.4 million tons in 1990 to 10.3 million tons in 1992. Imported wheat declined from 12.4 million tons in 1991 to 10.6 million in 1992, accounting for 17.4 percent of the year's agricultural import value. In 1992, U.S. agricultural exports to China decreased 25 percent to \$545 million, while U.S. agricultural imports rose 15.5 percent to \$379 million. [Francis C. Tuan]*

China's agricultural imports and exports grew a sharp 44-percent in 1992 to a record \$23.91 billion. The increase was attributed to a 45-percent rise in exports, amounting to \$15.26 billion, and a 43-percent increase in imports, totaling \$8.65 billion (table 3). The expanded imports came from more purchases of wool, and fish meal for animal feeding. The boost in exports stemmed from increased sales of aquatic products, vegetables, fruits, and cereals, largely corn.

### ***U.S. Agricultural Exports to China Declined in 1992, But Imports Rose***

In 1992, the U.S. merchandise trade deficit with China reached \$18.3 billion, second only to Japan. Agricultural exports to China declined 25-percent from 1991 to \$545 million. U.S. wheat exports to China declined from \$363.3 million in 1991 to \$273.0 million in 1992 because shipments dropped from 4.4 million to 3.0 million tons (appendix table 9). Wheat was the leading U.S. agricultural export to China, accounting for 50 percent of the total in 1992, although the United States remains a residual supplier (figure 1). China imported wheat mainly from the United States, Canada, Australia, Argentina, and the EC. However, China bought roughly the same amount of wheat from other sources almost every year during the 1980's, as shown in figure 1, and then purchased the rest of needed quantities from the United States. U.S. 1993 agricultural exports to China are forecast to remain at the same level as that of 1992. China has reaped bumper harvests for 3 consecutive years and has large grain stocks.

U.S. cotton exports to China were 133,500 tons in 1992, a 41-percent drop from the previous year. Cotton and wheat exported to China in 1992 together declined \$203.3 million, \$25.4 million larger than the total decline in U.S. agricultural exports to China from 1991 to 1992. The balance was partially offset by increased exports of poultry, nuts, soybeans, and soybean oil. U.S. cotton sales to China in 1993 are expected to decline sharply. China's cotton production dropped significantly in 1992, however, large stocks from prior years will fill its domestic demand.

The value of U.S. agricultural imports from China reached a record \$378.8 million, 15.5 percent over the previous year. Major imports included traditional items, such as tea, cocoa, spices, essential oils (citronella, spearmint, and

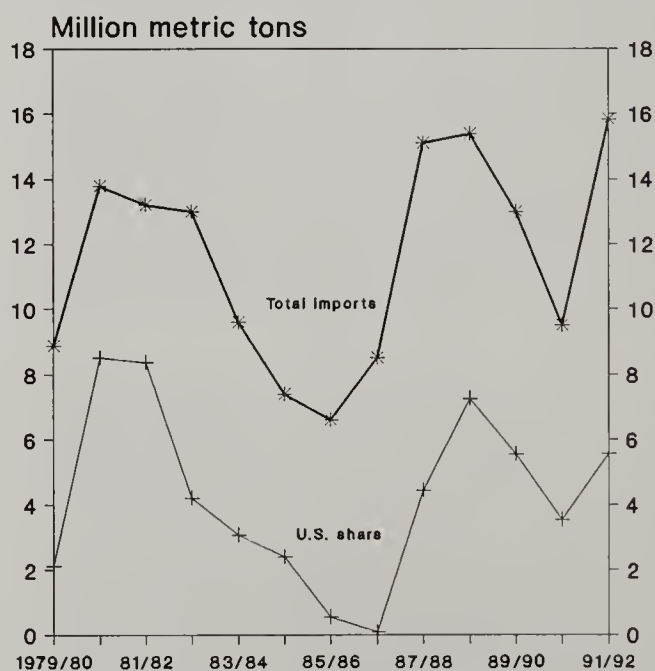
peppermint), feathers and down, canned mushrooms, and new items, water chestnuts and frozen vegetables. U.S. agricultural imports from China in 1993 are expected to expand to around \$400 million.

### ***China's Grain Exports Displaced U.S. Sales in 1992***

In 1992, China's agricultural export value topped \$15 billion, boosting the country's agricultural trade surplus to \$6.6 billion. China's agricultural trade surplus in 1992 surpassed the overall trade surplus by 50 percent (table 3).

The increased exports in 1992 paralleled development in 1991 in which expansion came primarily from more cereal, tobacco, and cigarette sales. China's bumper grain harvests since 1990 facilitated exports, particularly corn and rice, to Asian markets. China's customs statistics show that calendar 1992 corn exports reached 10.3 million tons, 32 percent over the previous year, and contributed nearly 8 percent of the agricultural export value. Corn ex-

Figure 1  
China's Wheat Imports:  
Total vs. U.S.



Source: U.S. Department of Agriculture



ports were only 3.4 million tons in 1990 and 7.8 million in 1991.

China mainly shipped corn to South Korea, the former USSR, and Japan. South Korean customs statistics show that corn imports from China for feed and industrial uses rose from 900,000 tons in 1990 and 3.5 million in 1991 to more than 4.9 million in 1992, largely displacing U.S. shipments.

In 1992, declining exports of tobacco, mostly flue-cured, were offset by more cigarette exports, up 75 percent from the previous year to \$292 million.

China's 1993 agricultural exports are expected to rise at a slower pace because of a slow down in the exports of bulk commodities. Increased exports are expected for processed and canned food.

### ***Agricultural Imports Also Expanded in 1992***

China's 1992 agricultural imports were \$8.65 billion, 10.7 percent more than the previous year. Major imported commodities included wool and fish meal for animal feed, which rose 121 and 11 percent over the preceding year. Vegetable oil imports decreased from 612,000 tons in 1991 to 420,000 tons in 1992.

In 1992, the quantity of imported wheat was 10.6 million tons, down 1.8 million from the previous year. However, the value surpassed the previous year by \$44 million, because of higher unit prices, and reached \$1.5 billion. Wheat accounted for 17.4 percent of China's agricultural import value in 1992.

In 1993, agricultural imports are expected to remain the same or slightly above last year's level. Import levels of traditional farm commodities, such as wool, cattle hides, and fish meal, will continue, but 1993 grain imports, mainly wheat, are expected to remain the same or increase slightly because of unusually high domestic stocks.

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# China's Input Delivery System in Flux

*The quantity of inputs for 1992 increased but the outlook for 1993 is uncertain. China's delivery of inputs to farmers is changing from one directed by central planners to one driven by market forces. Rising fertilizer prices and reduced profit prospects for 1993 have meant falling sales. Transportation bottlenecks restrict economic growth but there are plans to boost transportation capacity in the 1990's. Millions of farmers are working in nearby rural enterprises and in urban areas.*  
[Frederick W. Crook]

## Inputs for 1992 Increase

In 1992, farm supplies of manufactured inputs, such as electricity, chemical fertilizer, plastic sheeting, and pesticides, increased. Yearend large tractor stocks decreased slightly, while stocks of small tractors and trucks increased (table 4). Authorities claim that plastic sheeting is currently being used on 4.7 million hectares (ha) and that farmers have more than 200,000 ha of plastic-covered sheds to grow fruits and vegetables.

China's Customs Administration reported imports of 18.59 million tons (product weight) of chemical fertilizers in 1992, up 2.2 percent from 1991. Compound fertilizer imports decreased slightly to 6.54 million tons, but urea imports increased 6.9 percent to 7.48 million tons. In 1992, China imported 39,304 tons of pesticides, compared with 32,042 tons in 1991, up 23 percent.

## Input Picture Mixed for 1993

Major changes are underway in the delivery of agricultural inputs. Most provinces are ending government fixed quota purchases of grains and oilseeds and subsidized sales of chemical fertilizers, diesel fuel, and pesticides. Authorities in Sichuan Province followed central directives to abandon the old supply system and use markets to distribute inputs to farmers. Currently, supply and marketing cooperatives, newly opened stores, and individual merchants are marketing input supplies.

This spring, national and provincial household surveys were initiated to determine demand and supply conditions for inputs. An early spring survey of 34,000 rural households reported that farmers intended to increase their purchases of chemical fertilizers by 14 percent, pesticides 3 percent, and plastic film 31 percent. But a later survey indicated that farmers were actually buying less inputs than last year. The primary reasons for slack input demand were lower commodity prices and farm income in 1992, rising input prices, cash shortages, and government IOU's rather than cash payments for 1992 crops.

## Fertilizer Production and Use Down for 1993

Fertilizer production for 1993 likely will be down from 1992 because energy, labor, and raw material costs are higher. Farmers are buying less fertilizer because of rising

costs and low price prospects for the 1993 crops. Urea and phosphate fertilizer sales this year are off 52 and 91 percent, respectively.

Most fertilizer manufacturing facilities are owned by the government and losses in the past have been covered by subsidies. But enterprises are being encouraged to make profits and cut losses. Because of poor prospects for sales in 1993, about half of all phosphate fertilizer plants in the country have stopped production or have reduced output. Chemical fertilizer production in the first quarter of 1993 was down 3.9 percent from that period last year.

Chemical fertilizer is the largest single item in the petrochemical product category imported by China and amounted to slightly more than \$3 billion worth in 1992, \$629 million of which came from the United States. The tariff rate on chemical fertilizer is 4 percent and China's authorities report that it will not be reduced very much. About 66 percent of the product comes from GATT signa-

Table 4--China's major manufactured farm inputs, 1990-92

Item	Unit	1990	1991	1992
Yearend stocks:				
Lrg-med tractors <sup>1</sup>	1,000	814	784	758
Hand tractors	"	6,981	7,304	7,423
Rural trucks	"	624	617	654
Machinery production:				
Lrg-med tractors <sup>2</sup>	"	39	52	63
Hand tractors	"	1,101	1,335	1,354
Rural electricity consumption <sup>3</sup>	Mil. Kwh	84,450	96,320	110,700
Fertilizer output <sup>4</sup>	1,000 tons	18,797	19,795	20,993
Nitrogen <sup>4</sup>	"	14,636	15,101	16,050
Phosphate <sup>4</sup>	"	4,114	4,597	4,745
Potassium <sup>5</sup>	"	(47)	(97)	(198)
Fertilizer applied	"	25,903	28,051	29,302
Chemical pesticides	"	229	264	284
Plastic sheeting	"	331	na	na

<sup>1</sup> Large or medium sized tractors with a capacity of 14.7 Kw or more.

<sup>2</sup> Wheeled and crawling tractors of 14.7 Kw capacity or more.

<sup>3</sup> Not all for agricultural production.

<sup>4</sup> Effective nutrient weight. <sup>5</sup> Numbers in parenthesis derived.

Sources: 1992 China Statistical Yearbook; 1993 Statistics Abstract; China's Customs Statistics, No. 1, 1993; and various press reports.



tories. To ease their entry into the GATT, China's authorities are restructuring their economy to minimize signatories' objections. Authorities in Beijing tell farmers that to avoid "GATT signatories' accusation of discrimination," domestic fertilizer prices likely will rise to match international levels.

### ***Moderate Growth of Farm Machinery Sales***

The farm machinery market in 1993 will show moderate growth. Restrictions on the use of small farm tractors for short-distance hauling likely will decrease the demand for these tractors. On the other hand, the demand for farm-use trucks, trailers, and small passenger buses will increase. The Information Center of the China National Agricultural Machinery Corporation forecasts that 1993 sales of small, four-wheeled tractors will decrease by 10 to 15 percent. Sales of large farm tractors and implements will rise. The Center noted that there would be a brisk market for heavy duty (crawler type) tractors because of the construction and road-building boom. The Center forecasts that 1993 combine sales will increase slightly to 8,000 units. In 1993, the state plans to reduce by half its mandatory production quotas for farm machinery to help prepare the industry for more open market competition.

With regard to GATT accession, China has promised to reduce import licenses by two-thirds within 3 years and will not grant special protection to the farm machinery industry. These developments likely will produce some fluctuations in the farm machinery market in the next few years (2).

### ***Rural Electrical Power Consumption Increasing***

In 1992, rural electrical power consumption rose 14.9 percent, mostly for industrial enterprises and irrigation. China is also investing to extend power grids into underdeveloped areas and in 1991 nearly 2 million rural families received electricity. The State Statistical Bureau's income and expenditure surveys found that each 100 rural households averaged 10 TV sets in 1985, compared with 48 in 1991. Washing machines increased from 2 to 11, and electric fans rose from 10 to 53 (5).

China is scheduled to invest 11 billion yuan (\$1.9 billion) in rural electrification projects in 1991-95. About 60 percent of the expansion will come from new hydropower stations built in south China. The money will be raised by local governments and residents. Authorities look favorably upon the development of hydropower because it has ecological advantages. For example, farmers will burn less timber to meet their energy requirements.

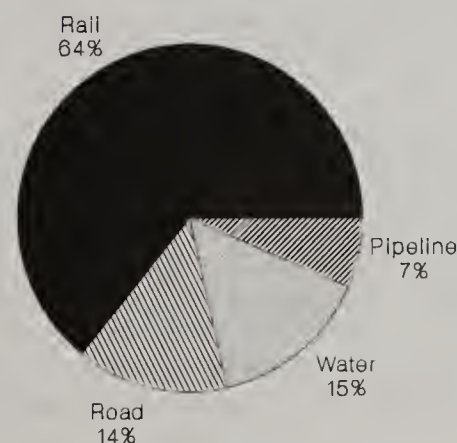
### ***Transporting Farm Products and Inputs***

China's huge economy is supported by a very small rail system and inadequate roads with only 600 kilometers (372 miles) of express ways. Transportation bottlenecks are an important constraint to China's rural economic growth and authorities plan to expand capacity in the 1990's.

Railroads carry a little less than two-thirds of China's freight (figure 2). In 1991, railroads carried 1.5 billion tons of cargo and racked up 1.097 trillion ton-kilometers (2 tons of cargo transported 10 kilometers would equal 20 ton-kilometers). The transport of farm products and inputs accounts for about 10 percent of railroad freight. For example, in 1991 railroads transported over 62 million tons of grain (66.9 billion ton-kilometers). Currently, China has only 50,000 kilometers of track, with 56 kilometers of track for every 10,000 square kilometers, a system that ranks 70th in the world. But because authorities use their rail system so heavily, about 26 million tons per kilometer, it ranks number one in the world in load intensity (5). The eighth 5-year plan (1991-95) designated 100 billion yuan, about 10 percent of total investment funds scheduled, to be spent on the rail system. But central revenues have been limited and railroad construction projects have slowed. Until recently the central government was the only entity in China investing capital in railroad construction. But now joint ventures (different ministries within China, provinces, and foreign firms) invest and manage short trunk and branch lines.

In the next 3 years, authorities plan to build the following rail lines: Beijing-Kowloon; the Lanzhou-Xinjiang; the Baoji-Zhongwei; the Houma-Yueshan; the Zhejiang-Jiangxi; the Beijing-Guangzhou; the Datong-Qinhuangdao; the Chengdu-Kunming; and the Xian-Ankang. These lines will speed the development of many rural areas, support agricultural trade with neighboring countries, for example, Xinjiang Province's trade with Kazakhstan, provide access to phosphorous deposits in southwest China, and encourage agricultural production by making inputs more accessible and providing greater access to markets.

Figure 2  
Carrying China's Freight



Source: State Statistical Bureau.



China ranks ninth among merchant marine nations. About 15 percent of its domestic freight is carried by ship. In the past few years, ports at Nanjing, Wuhu, and Wuhan on the Yangzi River have been opened to foreign ships. Ports at Heishantou and Shiwei in Inner Mongolia along the Erhkuna River (tributary to the Heilongjiang [Amur] River) have been opened to Russian border trade. Ports at Heihe, Qike, Fuyuan, Tongjiang, and Harbin on the Heilongjiang and the Songhua Rivers have been opened. Corn and soybeans can now be shipped via these rivers through Russia to the Pacific. Opening these ports to foreign shipping and constructing docks, warehouses, container and grain handling facilities, and grain silos support China's bid to expand agricultural trade.

Roads in China total about 1 million kilometers and carry about 14 percent of the country's freight. China only has about 600 kilometers of express highways, most roads are narrow and congested. Since 1949, thousands of kilometers of roads have been built each year so that almost all township centers can be reached by truck and bus traffic. The emphasis is on building better roads funded by the central government (it will use surplus food grains to pay construction workers), provincial and local governments, and foreign capital. Plans call for building four limited access highways: Beijing-Guangzhou-Zhuhai; Tongjiang-Dalian-Yantai-Shenzhen; Lianyungang-Xinjiang; and Shanghai to Chengdu. These new highways and the roads built and improved by local governments will greatly aid rural development.

### ***Rural Workers Seek Temporary Employment in Urban Areas***

Before reforms, rural laborers were forbidden entry into urban areas. During reforms, the rapid expansion of rural enterprises employed an estimated 80 to 90 million workers. Authorities in China estimate that there are about 150 million underemployed workers in rural areas. In 1992 and 1993, millions of these laborers left their families in the poorer inland areas to find work in the richer coastal provinces. They left their farms in part because prices for agricultural products had fallen and fertilizer and other input costs rose. In addition, households in many areas face stiff taxes and levies of labor to build local infrastructure projects.

Authorities have concerns about the flow of labor between rural and urban areas. For example, during the Chinese New Year, often in February, workers return home enmasse to spend the holidays and choke up an already overburdened rail system. In January 1993, an estimated 75 million passengers crowded onto trains, forcing managers to add passenger cars and drop freight cars to handle the overload. These large crowds created security problems in train stations and other public places.

Other authorities emphasize the benefits from these labor transfers. Once regarded with hostility, these workers are now viewed as a means to equalize incomes in poorer and richer areas. Cash earned by rural workers in urban areas is sent home to help families. Rural laborers moving to

coastal areas have alleviated labor shortages there. At the same time, poorer inland provinces benefit from workers being exposed to new ideas, new technology, and improved management practices. Many have returned to their homes to initiate business enterprises. Some provinces have started training programs to make their rural labor force more competitive in urban and coastal areas. Others publish information on labor demand and supply conditions (7).

Of all the input markets in rural China, labor has shown the most development because of mobility. Nonetheless, the flow of labor still has many restrictions. Rural residents still cannot compete on an equal footing with their urban counterparts. It is very difficult, for example, for families moving from rural to urban areas to get their status changed under the household registration system.

### ***Capital Availability for the Rural Economy***

Capital markets to service rural economic growth have not been developed very well. Currently, there is no legal rural financial market but funds do come from informal local sources.

In 1992, central government revenues amounted to 419 billion yuan (\$77.6 billion) while expenditures totalled 443 billion, leaving a budget deficit of 24 billion. The government invested 38.4 billion yuan in the agricultural sector, 8.7 percent of total spending. Saving deposits reached 1.155 trillion yuan, up 27 percent from 1991, while rural savings totalled 506 billion, up 100 billion. Sources of capital increased with the development of an insurance industry covering property and life and through the establishment of a limited stock and bond market.

A major rural credit crisis developed in 1992 when government buyers had no cash to exchange for contracted grain, oilseed, and cotton purchases. Before the harvest season, the government had transferred funds to the Agricultural Bank of China and other banks. These banks, however, chose to loan the funds to rural enterprises to earn higher rates of return. As a consequence, government purchase stations had few funds for buying agricultural commodities and were forced to issue IOU's. Farmer protests forced central government leaders to find cash to pay off the IOU's; however, this incident and falling prices for farm products prompted farmers to scale back 1993 efforts.

For 1993, government revenues are estimated to be 453 billion yuan, compared with expenditures of 473 billion, leaving a budget deficit of 20 billion. The government intends to invest 41.9 billion yuan in agriculture in 1993, up 9.3 percent from 1992. In 1993, government authorities plan to invest \$378 million to increase grain production in selected counties. Government investment will boost output and the county will sell more of its grain production to the state. Investment funds will be used to improve irrigation systems, farm and sideline processing facilities such as rice mills, and systems to prevent natural disasters such as drainage systems. From 1993 to 1995, the government intends to use 2 billion yuan worth of grains and other prod-



ucts to pay surplus rural laborers to improve fields, build irrigation systems, develop orchards, and construct local roads and telecommunication facilities.

Finance Minister Liu Zhongli reported that in 1993 the government will take three measures to support agricultural development. First, grain subsidies will be eliminated and the money will be used to establish a fund to moderate swings in farm commodity markets. Second, the government will stop selling low-priced inputs linked with procurement contracts, but will give cash payments to farmers of the difference between market prices for inputs and the old subsidized price. Third, the government plans to reduce tax rates for farmers raising specialty crops and forestry products (1).

The Agricultural Bank of China will increase loans to agriculture in 1993 by 30 billion yuan (\$5.5 billion). Local banks were encouraged to issue loans to support the spread of new production techniques, to produce quality products for export, to support expansion of irrigation systems, and to build a network of socialized services. Whether the local banks will follow Beijing's lead remains to be seen.

The Ministry of Agriculture is looking for foreign funds to invest in rural areas. The first such loans were provided by the World Bank in 1982 (the North China Plains project) and since then \$8 billion in funds from foreign sources have been allocated for the agricultural sector, \$3 billion have been used. For 1993, \$490 million in foreign funds will come from the World Bank to improve China's capacity to manage and handle its large grain stocks. The Asian Development Bank, the International Fund for Agricultural Development, and foreign countries will invest funds to develop an agricultural service system, reclaim farmland, and improve China's red soils.

Rural households will invest billions of yuan in 1993. With the introduction of the profit motive, farm households will invest less in raising grains, such as rice because of falling prices and rising costs, and more in crops such as oilseeds, fruits, vegetables, livestock production, and aquaculture. Households also will continue to invest funds to maintain and construct domestic living space and develop rural industrial enterprises.

### **Slow Development of Land Markets**

Of all the input markets, China's land market is the least well developed. There is no private ownership of land in China. Land is owned either by the national government or by small economic cooperatives. The government owns the vast majority of the land, including undeveloped areas, land in urban areas, and farmland in state-owned farms. Most farmland in China, however, is collectively owned. Technically, farmland is owned by rural resident groups (cunminzu), which are remnants of the old production teams in now demobilized commune system. Most farmers signed 15-year land contracts with the resident groups

(townships, villages, economic cooperatives) from 1980 to 1984, so contract renewals and land use issues will surface from 1995 to 1999.

Currently, there is not a well-defined land market in China. Occasionally, small plots of land are sold in special economic zones and in large urban areas. Sales of farmland are very rare. Nonetheless, farmers have found a way to transfer land use rights. Village committees and township governments manage the land contract system and these entities do permit transfers of land use rights. Households who wish to exit crop cultivation can sub-contract or lease their land to neighbors who want to expand the scale of their farming operations. These households with valid land contracts can work out the details of the sub-contract and then can finalize the deal by registering the change with the village committee (economic cooperative) and the township government.

### **Market Information Limited**

As markets develop in China, information systems should supply pertinent data about supply and demand conditions. The central, provincial, and county governments publish limited quantities of statistical data for market participants. Newspapers, TV, and radio are beginning to report price information. But on the whole, a system to supply price information and market situation and outlook analysis has not been developed.

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# Reform of China's Grain and Edible Oilseed Markets

*A revolution is underway in China's grain and oilseed economy. The old centrally planned "purchase and supply" systems are being scrapped. Government authorities plan to use markets to link producers and consumers. They also plan to build macroeconomic levers and government institutions to manage markets. Because the marketing revolution is still in progress, effects on U.S. trade are uncertain.*  
[Frederick W. Crook]

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## **Leaders Decide to Reform the Economic System**

At the December 1992 National Conference on Reforming Agriculture, Premier Li Peng declared that China should build a "socialist market economic system" and should initiate the following reforms.

- Transform the functions of government.
- Change the way enterprises operate. Develop levers which can be used to expand or contract economic activity.
- Promote the development of markets (especially capital markets).
- Implement price reforms. The price mechanism should be allowed to function, but at the same time ways should be found to limit price fluctuations.
- Establish a legal system to support a market system. Regional barriers to trade should be reduced and domestic markets should be aligned with foreign market conditions.
- Improve the information system to report market conditions and to forecast supply and demand conditions for products (2).

The former Minister of Agriculture, Liu Zhongyi, reported that China's rural economy will be governed both by market forces, by "indirect" means through government macroeconomic control levers, and by direct government intervention in markets through purchases and sales of commodities in grain and oilseed markets (14). Minister Liu reported that the central government plans to organize the following systems to guide the production, storage, processing, trade, and consumption of farm products.

- Disseminate information on farm production.
- Organize a grain and cotton reserve storage system to curb price fluctuations.
- Organize wholesale and future markets to improve the movement of farm products.
- Improve the farm product processing industry.

- Improve systems which will deliver science and technology to the rural sector (15).

## **The Grain Purchase and Supply System**

From 1955 to 1992, the grain bureau implemented the grain and oilseed "purchase and supply" system by which farmers were required to sell fixed quotas of grains and edible oil at low state controlled prices. The grain bureau transported, stored, milled and retailed grain products and edible oil to urban citizens eligible to have "grain and edible oil ration coupons." To increase the quantity of products sold off the communes, the grain bureau purchased above-quota grain and edible oilseeds at higher prices. Grains and edible oilseeds were forbidden to enter open markets from the mid-1950's to the early 1980's. In 1985, the grain bureau revised its procurement system by terminating fixed and above-quota purchases and by promoting the use of grain purchase agreements with individual farm households (4, 7).

The quantity of grain procured increased from 61.3 million tons in 1980 to 140 million tons in 1990 (31.4 percent of total grain production). The quantity of grain purchased in the same period via fixed quota prices decreased substantially from nearly 82 percent to 37 percent. Conversely, the amount of grain purchased by the government at negotiated prices (influenced by market prices) rose rapidly in this period. Also, the sum of grain purchased outside of government channels (in open markets) rose substantially (table 5).

## **Farm Product Purchases for 1993**

The State Planning Commission intends to reduce 1993 production and marketing targets for most agricultural products, except for grains, cotton, cooking oil, and tobacco to help balance supply and demand (13). At the beginning of 1993, the general plan was to gradually remove all restrictions on grain and oilseed markets by 1996 to lessen the disruption in the economy and society in the transition period. They expected some provinces to lift restrictions faster than others. Details of the plan were as follows.

- The state will develop preferential systems and policies. The state may continue to sign purchase contracts with farmers to ensure grain supplies for urban dwellers, protect



**Table 5--Grain purchase patterns change from 1980 to 1990**

Kind of purchase	Quantity		Percent of total	
	1980	1990	1980	1990
	Million tons		Percent	
State fixed quota, fixed price	50.2	51.8	81.9	37.0
State negotiated price	8.6	43.7	14.0	31.2
Other	2.5	44.5	4.1	31.8
Total	61.3	140.0	100.0	100.0

Source: 5, p. 78-81; and 26.

farm income, and stabilize grain prices. To prevent a drop in farm income and to stabilize grain prices, the government will retain the right to set lower and upper limits on grain prices. It will be very difficult for the Government to accomplish all three objectives at the same time.

- The state will develop a three-level marketing system. The foundation of the system will be local open markets. "The backbone of the system will be regional wholesale markets, and the state level wholesale market as the head." (1)
- The state will establish a reserve grain system and a fund to reduce fluctuations in the market (9).
- The government will strengthen the state owned grain enterprises and will improve grain marketing channels (1).

The provinces have implemented these basic policy measures in different ways. Some have reduced the mandatory purchase targets. For example, in October 1992 the grain bureau in Heilongjiang Province reported that its fixed quota target for the newly harvested 1992 grain crops was being reduced from 5.2 million tons to 4.1, a 21-percent decrease. For 1993, it plans to reduce the quota from 4.1 to 2.45 million tons and for 1994 to 1.7 million tons (8). The grain bureau intends to use contracts to formalize purchase agreements with producers. The proportions of wheat, corn, and soybean purchases in 1993 will be the same as in 1992. For 1993, Xinjiang Province plans to reduce mandatory quota purchases by 40 percent. Henan Province expects farmers to sell grain at contracted prices.

Some provinces have opted to end fixed purchases. For example, Hunan Province ended fixed price purchases of grains and edible oilseeds as of January 1, 1993. Agricultural taxes paid in kind will be evaluated at market prices. Hunan also intends to cease selling diesel fuel, farm machinery, and chemical fertilizers at low fixed prices (10). In 1993, Hunan Province government grain requirements will be purchased at market prices.

Some provinces intend to use "guidance planning," the specifics of which have not been made clear, except it prob-

ably means that various government institutions manipulate prices to achieve economic and political objectives.

For 1993, Shandong, Henan and Jiangsu Provinces will end purchasing cotton at fixed quota prices. In the future, the area sown to cotton, government procurement, and sales of cotton will be carried out under "guidance planning" (17). Provincial officials intend to set both a floor and a ceiling price. They expect large provincial wholesale cotton markets to be established, with smaller wholesale markets developed at the county level with government permission. Primary markets may be developed at locations where cotton is ginned (see pages 24-26 for more detail on cotton marketing reforms). Cotton business enterprises, supply and marketing cooperatives, and other enterprises with cotton business, which have been approved by the Industry-Commerce Management Bureau (Gong Shang Guanli Ju), can participate in the various cotton markets (17).

### ***Grain Bureau in the Midst of Reorganization***

The central government is pushing parts of the grain bureau to form enterprises (transportation, storage, processing, retailing, and construction) that will assume all risks in competing in the marketplace (7). For example, Tianjin municipality has pioneered a new role for its grain bureau by dividing it into two units: one as an agent in the market place, and the other to implement policy programs. The policy units will carry out programs such as contract purchasing, disaster relief, military grain supply, and grain storage for regulatory purposes, and losses will be underwritten by the central government from general budget revenues (12). More than 200 prefectures (sub-provincial units), cities, and counties are using this approach. In Shanxi Province, the grain bureau will manage grain reserves owned by the province and shipments between provinces. County grain bureaus will be responsible for annual grain and edible oilseed balances (16).

### ***Retail Sale of Agricultural Commodities***

In 1978, 113 agricultural commodities were under state price controls. By fall 1992, only six remained: grain (including wheat, rice, corn, and soybeans, but not sorghum, millet, barley, oats, potatoes, and other miscellaneous grains), cotton, tobacco, medicinal herbs, wool, and resin. The prices of all other agricultural commodities are now determined by market forces (11).

From late 1992 to spring 1993, various administrative units experimented with different ways to end the "grain supply" system. In some cases, local authorities simply ended it and ration coupon holders began purchasing grain supplies on local markets. In Beijing municipality, authorities gave 10 yuan per month to employees in state-owned enterprises and urban residents to offset some of the increases in food prices. Some areas guaranteed that ration holders will be able to purchase grain at market prices. Authorities in other jurisdictions tried to manage the retail price. In Jilin Province, authorities ended grain rations for urban dwellers but continue them for military personnel.

By June 1993, all provinces ended the grain ration system except for Tibet, Gansu, and Hainan (5).

### **Local Open Markets**

In 1990, the State Statistical Bureau reported that there were 72,579 open markets in China, 13,106 in urban areas and 59,473 in rural areas, about 1 per township (8). In addition, many larger villages rotate their market days with those in townships (8). Authorities in Jiangsu, Shandong, and Fujian, report that in 1992 more than 60 percent of agricultural commodities were bought and sold in open markets. These local open markets are thriving. Goods are transported by any means available and display, sanitary, warehouse, and storage facilities are improving.

### **Regional Wholesale Markets**

In the 1980's, the Ministry of Commerce worked out the transfer of agricultural products from one county, prefecture, or province to another. But transfers were often disrupted by changes in commodity prices, regional protectionism, and speculation (8). In the early 1990's, regional wholesale markets were established to expedite the flow of goods (table 6).

The Vice Minister of Commerce, Bai Meiqing, noted that 4.3 million tons of grain and edible oilseeds changed hands in central and provincial wholesale markets in 1992 (18).

Wholesale markets in Heilongjiang Province have sold over 1 million tons of grain since they were established 3 years ago. The province has 10 special markets relating to corn, soybeans, rice, and other food grains. Grain buyers from other provinces come to these markets to make purchases. More than 70 percent of the grain shipped to other provinces goes through these markets.

Some officials envision one or two primary wholesale markets in each county. For example, Hubei Province appears to have one in each county. Grain buyers within the province or from elsewhere can buy grain in these markets (8).

**Table 6--China's wholesale grain markets**

Location	Commodity	Province
Wuhu	Rice	Anhui
Wuhan	Rice	Hubei
Changchun	Corn	Jilin
Weihai	Corn, peanuts	Shandong
Changsha	Rice	Hunan
Jiujiang	Rice	Jiangxi
Harbin	Soybeans	Heilongjiang
Urumqi	General grains	Xinjiang
Shanghai City	Rice	Shanghai

Source: 3 and 4. The above wholesale grain markets appear to be nationally recognized by the central government.

### **State Level Wholesale Markets**

The Zhengzhou grain market was jointly established by Henan Province and the Ministry of Commerce in October 1990. It is recognized as a national grain spot wholesale market and on May 28, 1993, it began operation as a futures market for wheat, corn, soybeans, mung beans, and sesameseed (6). Authorities plan a second grain wholesale market in Shanghai to begin toward the end of 1993 and for it to evolve into a true futures market (3).

Recently, the State Council approved the organization of the China Grain Conglomerate, which will be a transnational enterprise representing trade, agricultural, and industrial interests. The China National Cereals, Oils and Foodstuffs Import and Export Corporation is the core member, with 300 enterprises participating (19). Authorities are encouraging foreigners to participate in China's grain markets, but have not reported regulations or details of incentive packages (13).

### **Barriers Restricting Market Reforms**

For the marketing reform to be effective, China's leaders will have to overcome numerous obstacles. Its overburdened rail transportation network and relatively underdeveloped road system constrain the development of grain and oilseed markets. Some local authorities use governmental powers to create monopsony and monopoly marketing conditions, and set up barriers that restrict the free flow of commodities. Since capital markets are not well developed, many companies cannot efficiently finance their transactions. Information networks are not well developed. Participants in the marketplace do not have a good grasp of supply and demand conditions. Finally, the legal system is not developed to efficiently solve contract disputes. The success of reforming grain and oilseed markets will depend in part on the government overcoming the above obstacles.

### **Preliminary Assessment of the Effects of the Reforms**

Officials in China suggest that the reform of the grain and edible oilseed system has provided powerful incentives to producers to grow products that consumers demand. Consumers are getting higher quality, greater variety, and fresher products than before. The old method of fixing retail prices at low levels encouraged excess demand for grains and waste in urban areas. When prices are allowed to rise, urban consumers reduced purchases by as much as 20 percent. The reforms have altered supply and demand conditions so that the perception that China had a chronic grain deficit has been replaced by one of a slight surplus (7). The reforms have brought market discipline to manage grain stocks. Managers of storage facilities and millers now need to consider interest rates and carrying costs in making storage decisions.

Workers and employees in the grain bureau system must have certain anxieties about the future of their jobs as their organization undergoes restructuring. At the same time, ur-



ban dwellers on fixed incomes, especially the urban poor, probably are less well off.

By unravelling the grain supply system, the government lost an important tool to control population movements. Before the reform, rural citizens did not move to urban areas because they could not purchase food grains in the cities.

Only those citizens with urban identity cards and grain coupons could go to the local grain store to buy food rations. Rural citizens can now simply go to the local open market and purchase their food grain requirements.

The effects of this reform on world agricultural trade will emerge in the next few years as China's consumers sort out their own preferences for various products, and as farmers find their comparative advantage in producing goods.

In the past, some of China's foreign policy measures went against U.S. trade interests while other policy measures may have earned the United States a larger share of the market than was based on economic conditions. The policy element may well be reduced in the next few years.

China's international grain and oilseed trade will continue because on the one hand it has a huge agricultural economy, which likely will become more efficient and competitive. On the other hand, China has a huge and growing consumer market, which likely will become accessible to other countries. The United States produces a wide variety of grains and oilseeds and China likely will continue to import wheat in the near term and longer term it could import soybeans and maybe corn.

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# Slower Growth for the Agricultural Economy in 1993

*Government officials are revamping the urban grain and edible oil rationing system and are allowing markets to affect an increasing number of economic decisions. These policy changes likely will affect the mix of crops produced and certainly will focus the attention of all participants in the rural economy on prices, costs, benefits, profits, and quality of products. In this transition, the growth of the agricultural economy likely will slow a bit as citizens and enterprises shift production, marketing, processing, stock, and consumption patterns.*  
[Frederick W. Crook]

China's agricultural economy likely will grow slower in 1993 than 1992's 4-percent rate. Grain output is forecast to decrease by 1.6 to 3.8 percent from the 442-million-ton 1992 crop. Area sown to grain crops likely will decline because some cultivated land will go to urban construction and new roads, and farmers will shift to more profitable vegetable and fruit crops and allow some fields to lie fallow. Oilseed production for 1993 is forecast at 29.3 million tons, about the same as the 1992 crop. The cotton crop for 1993 is forecast at 4.5 million tons, about the same as in 1992. Sugar output for 1993 is forecast at 76 million tons, down 9 percent from 1992.

Meat output for 1993 likely will expand from the 33 million tons produced in 1992. Rising incomes will create strong demand again in 1993. Producers will be able to boost output because of ample feed supplies from the excellent 1992 grain and oilseed crops.

The agricultural sector generates only 20 percent of China's gross domestic product while heavy and light industry account for 63 percent (figure 3). Agricultural output used to generate most of the value of output from the rural economy. But since 1980 rural industrial output increased dramatically so that agricultural output now only accounts for 43 percent of total output of the rural economy (figure 4).

China divides its agricultural economy into five sectors: crops, animal husbandry, fisheries, forestry, and other production such as collecting medicinal plants, trapping animals, and small scale handicraft manufacture. Output from animal husbandry and fisheries rose dramatically in the last decade and account for about 32 percent of total output of the strictly agricultural economy (table 2). Crop cultivation's share of the agricultural economy decreased steadily from 72 percent in 1980 to only 57 percent of the total in 1991 (figure 5).

Grain crops account for 75 percent of total sown area, of which wheat, rice, and corn represent 57 percent. Cotton, oilseeds, sugar crops, and tobacco account for 16 percent of total sown area, with fruits, vegetables, and forage crops the remaining 9 percent (figure 6).

## Grain Production Approached Record in 1992

Production of wheat, rice, corn, sorghum, millet, barley, oats, soybeans, potatoes, and pulses (China's definition of grain) totaled 442.6 million tons in 1992, according to the State Statistical Bureau (SSB). Provincial grain production reported by provincial statistical communiques, newspapers, and radio broadcasts suggests a harvest close to the figure reported by the SSB (appendix table 2). Output was up 1.7 percent from the 1991 crop of 435.2 million tons and just under the 1990 record 446.2 million tons (table 7). Improved farm management and increased input use

Table 7--China's grain production, trade, and stocks for 1992 and forecasts for 1993

Indicator	92/93	93/94
million tons		
Total grain 1/		
Production	442.7	425-435
Imports	7.4	9.8
Exports	10.4	9.7
Stocks	82.0	66.0
Wheat	July/June	
Production	101.6	96.0
Imports	7.0	9.0
Export	0.0	0.0
Stocks	23.9	18.9
Rice	Jan/Dec	
Production (paddy)	186.2	175.0
Imports (milled) 2/	0.1	0.05
Exports (milled)	0.9	0.5
Stocks (milled)	28.1	23.6
Corn	Oct/Sep	
Production	95.4	92.5
Imports	0.0	0.0
Exports	9.0	8.5
Stocks	26.0	19.0

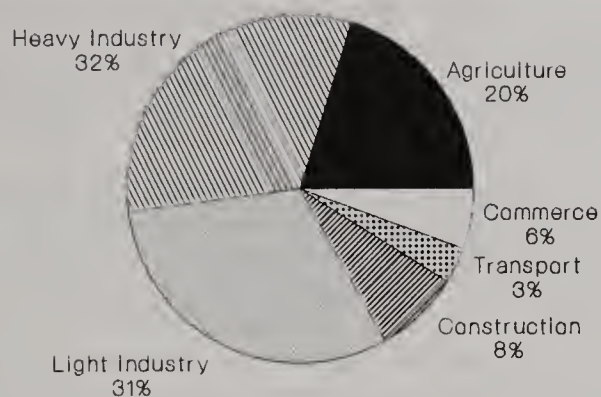
Sources: USDA.

1/ Wheat, rice (on a paddy basis), coarse grains, soybeans, potatoes (grain-equivalent weight using a 1:5 ratio of grain to raw weight), pulses, and other grains are included in total grain.

2/ For the 1992/93 rice marketing year, trade data is for calendar 1993.

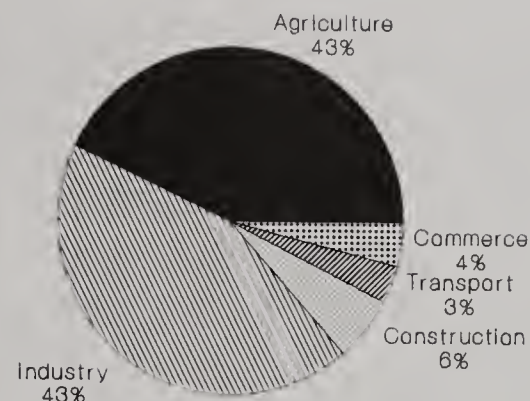


**Figure 3**  
**China's Economy by Sector**



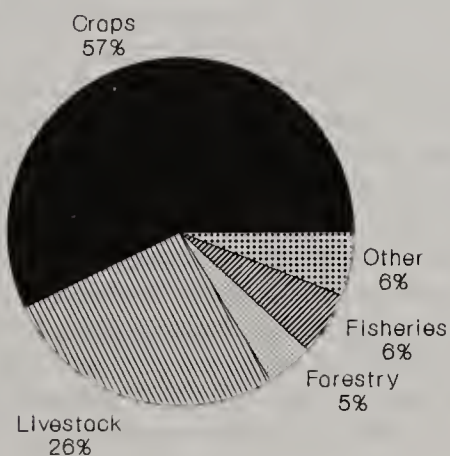
Source: State Statistical Bureau

**Figure 4**  
**China's Rural Economy**



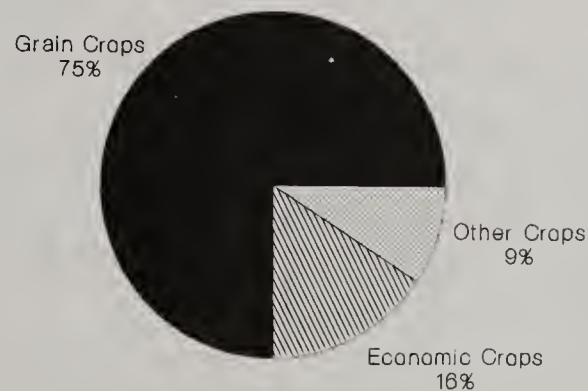
Source: State Statistical Bureau

**Figure 5**  
**China's Agricultural Economy**



Source: State Statistical Bureau

**Figure 6**  
**China's Crop Economy by Shares of Sown Area**



Source: State Statistical Bureau

boosted yields 3.3 percent. Area sown to these grain crops decreased 1.6 percent (appendix table 1).

### **New Grain Stock Data Published**

Since 1949, government authorities have viewed grain stock data as "state secrets" having great strategic and commercial value. As a consequence, very little stock data has been published. But a November 1992 article published in China said that according to the State Statistical Bureau grain stocks for 1990 were 491 million tons, compared with the USDA estimate of 82 million (table 8).

The article estimated that domestic demand for grain in 1990 was 415 million tons compared with an output of 446 million tons. The United Nations Food and Agriculture Organization has recommended that countries keep between 17 to 18 percent of annual consumption as reserves (about the amount consumed in 2 months). On this basis, China in 1990 had 14.2 months worth of grain in reserves, plenty to cover any short falls in production stemming from reforms in the system.

### **The New Stock Estimates Should Be Evaluated Carefully**

The authors of the report were careful to note that the stock numbers were not their estimates but came from the State Statistical Bureau (SSB). The SSB is the government's source of official statistics and has been the principal source for agricultural statistics for the international statistics community during the past decade. USDA researchers have had regular contacts with SSB over the last decade and believe that officials do have stock data.

Some reasons for the discrepancy between the SSB and USDA statistics are that beginning in 1970, authorities encouraged households to store grain. It is possible that households and farm families accumulated considerable grain stocks from 1970 to 1990 (table 9).

Some 274 million tons, 56 percent of the 491 million ton grain stock number can be accounted for if rural residents kept a 1-year supply of grain on the farm and if the grain bureau maintained a 1-year supply for urban dwellers.

From 1980 to 1990, some of the stock build-up could have resulted from the grain bureau forcing farmers to grow grain crops for which there was not a market. For example, in south China the grain bureau forced farmers to raise early-crop rice, which was high yielding but produced a low-quality product. Consumers preferred not to buy this class of rice when free markets opened for business. The result was that early-crop rice was left to accumulate in granaries. Also in the 1980's grain stocks may have risen because output exceeded demand.

Grain output rose from 320 million tons in 1980 to 442 million in 1992. At the same time, demand for certain varieties of grains may have slowed. Rural and urban market and price reforms raised the price of grains, encouraging industrial and household consumers to become more efficient in their use. With rising incomes, citizens are consuming less coarse grains and more fine grains like wheat, rice, and millet. They are eating more processed foods, vegetables, and fruits and less grain products. The grain system may have been slow in adjusting to these demand shifts, resulting in less-preferred grains accumulating as stocks.

Current central government behavior suggests large stocks. The State Council has established the State Grain Reserve Bureau to stabilize markets, manage the grain economy, protect the interests of producers and consumers, and provide reserves to off set losses from natural disasters. Since 1990, the central government has expanded storage space but has not kept pace with demand. In 1993, the World Bank is scheduled to loan \$490 million to China to upgrade its grain handling capacity (16). The central and local governments will match the amount of the World Bank loan to expand grain storage capacity by 40 million tons. A spring 1993 newspaper report noted that stocks controlled by the central government exceeded 120 million tons (7). Authorities estimate that more than 50 million tons of

**Table 8--USDA and "SSB" grain stock data compared**

Years	USDA estimated total ending grain stocks	Grain Reserve data attributed to the SSB	Annual net change in SSB stocks
-----million tons-----			
1970	36.5	1/ 40.0	NA
1974	65.8	2/ 80.0	NA
1986	76.8	336.0	NA
1987	72.0	363.1	+27.1
1988	64.0	380.0	+16.9
1989	64.0	417.0	+37.0
1990	82.0	490.9	+73.9

1/ (8); 2/ (2). Source: (4, 10). NA means not applicable.

China defines grain stocks as those grains in bins at the end of their grain year which runs from April 1st through March 31. USDA ending stocks are June 30 for wheat, December 31 for rice, and September 30 for coarse grains and soybeans. In the mid-1980's ERS completed a project to estimate supply and use tables for China's grain crops. Adjustments were made in stock and feed estimates so that year to year changes in ERS estimated per capita food grain consumption paralleled changes in per capita grain consumption in China. For a detailed description of how stock estimates were made see "China's Grain Supply and Use Balance Sheets" (5).

**Table 9--China's stock requirements in rural and urban areas.**

	6-month stocks	1-year stocks	18-month stocks	2-years stocks
Rural	105.3	210.6	316.0	421.3
Urban	31.6	63.2	94.8	126.4
Total	136.9	273.8	410.8	547.7

Sources: Population estimates from (13, p. 77) and consumption estimates from (3, p. 235).



grain are being stored in the open air. Beijing's grain storage building program, reports of large state controlled stocks, plus the World Bank loans to improve handling capacity suggest that China may have larger stocks than previously estimated.

### ***Grain Production Projected To Fall in 1993***

Area sown to grain for 1993 is projected to fall by 2.1 million hectares (ha) (2 percent) to 108.5 million, in spite of government and party campaigns to maintain land in production. The Ministry of Agriculture surveyed farmers' spring 1993 planting intentions and found that they planned to sow 1.67 million fewer ha to grain (6). Researchers at the Chinese Academy of Agricultural Sciences (CAAS) say that grain area could fall from 3.3 to 4 million ha (8).

The record crop in 1990 and the very good crops in 1991 and 1992 and large stocks depressed grain prices in 1992 (14). At the same time, input prices rose, squeezing farmers' profit margins. USDA projects a total grain crop of from 425 to 435 million tons for 1993, compared with a target of 445 million. Because farmers had bumper grain crops in 1992, China again may be a net grain exporter in 1993.

### ***More Wheat, Imports Down***

Wheat production in 1992 reached 101.6 million tons, 5.8 percent above 1991, as area decreased 1 percent to 30.5 million ha, yields increased 7.4 percent to 3.3 metric tons per ha because of more inputs and good weather. Both winter and spring wheat regions had favorable growing conditions in 1992. The winter was mild, spring rains were adequate, and the early summer drought provided excellent harvest conditions. The quality of the wheat crop in 1992 was very good (14).

Rising incomes and population increases were the primary forces supporting demand for wheat. Wheat consumption rose steadily over the last decade but consumption leveled off in 1991 and 1992. Urban consumers in north China continue to eat more high-quality baked goods, cookies, and instant noodles. But urban consumers in south China are changing their tastes from traditional rice to wheat products. For example, in Guangdong Province, per capita rice consumption fell from 162 kilograms in 1987 to 84 in 1992. Rural consumers in traditional wheat producing areas continue their high demand for wheat products.

The quality of flour is becoming an important issue. With the growing importance of open retail markets and the government's decision to end the grain rationing system, consumers are demanding higher quality wheat products. In the past, they had little recourse to poor quality rationed flour, but open markets now offer high-quality flour.

USDA estimates that the "ending stock-to-production ratio" for 1992 of 24 million tons, 24 percent, fell within the traditional range of 23 to 26 percent. However, the publication of a 491-million-ton total grain stock number for 1990 suggests that China could be carrying larger wheat

stocks than generally estimated (10). If the ratio of wheat production to total grain production roughly parallels the composition of stocks, then stocks for 1990 could be around 108 million tons, 4 times the previous estimate and about 1 year's supply at current rates of consumption.

Wheat imports for the July 1992/June 1993 year are estimated at 7 million tons, down more than 50 percent from 15.8 million tons a year earlier. There are several factors behind the steep decline. First, the 1992 record wheat crop brought ample supplies to market. Second, it is possible that the government reevaluated its grain stock position in the light of reforming the grain economy and determined that its wheat stocks were sufficient. Third, the government may be less sensitive to using wheat imports to maintain good relations with exporters, Australia, Canada, and the United States. Fourth, wheat quality for the 1991/92 was not good because of rainy weather during harvest and flooding along the Yangzi River. Wheat quality for the 1992/93 crop was very good. Also better intra-and inter-provincial marketing lessened the need for imports of quality wheat to overcome internal distribution and transportation bottlenecks.

### ***Good Wheat Crop Forecast for 1993***

Wheat output for 1993 is projected at 96 million tons, 5 million below the record 1992 crop. Wheat area is projected at 30.5 million ha, about the same as last year even though there was a general decrease in cultivated land and that planted to grain crops (1). With the return of more normal weather, yields are projected at about the level of years prior to 1992, 3.18 tons per ha.

Wheat imports for the July/June 1993/94 year are projected at 9 million tons because of the lower crop. Imports will help meet consumer demand for higher quality and specialty wheats and to overcome domestic transportation constraints.

### ***A 185-Million-Ton 1992 Rice Crop Near Record***

Rice output for 1992 was 186.2 million tons (paddy basis), slightly above the 183.8-million-ton 1991 crop, and only 3 million tons short of the record 189 million tons in 1990. Sown area fell 1.5 percent from 1991 to 32 million. In the south, farmers increased the area sown to high-quality Indica rice and in the north they grew more high-quality Japonica rice. These increases, however, were more than offset by the reduced area sown to low-quality, early rice crops in south China. Rice yields in 1991 were reduced by heavy rains and flooding in the Yangzi River Valley, China's primary rice producing area. Yields in 1992 reached an estimated 5.8 metric tons per ha, slightly exceeding the 1990 level (appendix table 1). Drier-than-normal weather in south and central China and cooler-than-normal temperatures in northeast China prevented yields from climbing higher.

Consumers in urban areas are eating less rice and more meat, fruits, vegetables, and wheat products. However, the rural population probably continues to eat large quantities of rice (15).



Rural reforms, which permitted farmers to respond to market signals and consumers to purchase rice in open markets, set the stage for a revolution in rice consumption patterns. Government policy had stressed increasing rice output with little regard for quality. The largest stocks were in high-yield, low-quality early rice because government programs pushed farmers to raise it, but consumers preferred other varieties. With open markets, consumers in south China bid up the price for high-quality intermediate and late crop rices at the expense of the low-quality early rice. Grain stations in south China now hold large quantities of early rice, with few buyers. Urban consumers pay top prices for specialty rices (glutinous, "fragrant" Thai rice, and "northern rice" from Heilongjiang) (4).

USDA estimates rice stocks for 1992 at over 28 million tons (a 21-percent stock-to-use ratio). Stocks could be significantly larger than that, according to the newly published data. About 60 percent of the stocks may be stored on farms. Farm families generally try to keep 6 months to 2 years worth on hand for their own requirements and as a kind of insurance policy against crop failures, breakdowns in the transportation system, and ill health. Grain bureau officials try to keep about a 3-month stock of rice on hand to supply urban residents. Low-quality rice stocks are often exported, used in food processing (including beer), and for animal feed.

China is a rice importer and exporter. Imports have steadily fallen from 1.2 million tons in 1989 to 100,000 tons in 1992. Most imports come from North Korea and Thailand and some from Vietnam (not recorded in custom data). China's exports climbed from 320,000 tons in 1989 to an estimated 900,000 tons in 1992. Most was low-quality rice shipped to Cuba, Europe, and Africa.

#### ***Rice Production Forecast To Decrease in 1993***

Rice area will likely decline to 31.3 million ha as farmers shift available paddy land to more profitable cotton, oilseeds, sugar, fruit, and vegetables. Farmers are likely to plant less area to higher yielding, but lower quality rice because of the difficulties they will face in marketing the product. Yields are expected to fall slightly because of lower fertilizer use and more area in lower yielding varieties. An average yield of 5.66 tons of paddy per ha would mean a 177-million-ton crop, down substantially from 1992.

For calendar 1993, China's imports are forecast at 50,000 tons, mainly high-quality varieties from Thailand destined

for cities. For the year, exports may reach over 500,000 tons, mostly to traditional destinations.

#### ***A 95-Million-Ton Corn Crop for 1992***

Corn output for 1992 was 95.4 million tons, down 3.4 percent from 1991, primarily because of 2.5 percent less area (appendix 2). There was a general decline in cultivated area as farmers planted more profitable crops such as fruits and vegetables. [See the special article "Underreporting of China's Cultivated Land Area: Implications for World Agricultural Trade" for implications for larger corn production because of possible underreporting of cultivated land.] Yields fell by 0.1 percent, primarily because of mid-summer drought conditions on the North China Plain.

An increasing portion of total use has been for livestock feed, in 1979 an estimated 30 percent, compared with 65 percent in 1992. Most of the rest is consumed by low-income rural residents. A small but growing amount of corn is used for industrial purposes and in the food processing industry (starch).

USDA estimates corn stocks for 1992 at over 26 million tons (a 26-percent stock-to-use ratio). According to data recently published in China, corn stocks could be significantly larger than estimated by USDA. USDA officials who have traveled in northeast and north China over the past 4 years, say grain stations have stored millions of tons in temporary bins.

With good 1991 and 1992 corn crops, no imports are expected in October 1992/September 1993. China exported 9.3 million tons in 1991/92. However, competition with lower priced feed wheat, especially in Korea, is expected to result in a small drop in exports to 9.0 million tons in 1992/93. China ranked second behind the United States in corn exports for 1991/92. China's Custom Bureau reported calendar year 1992 exports of 10.3 million tons. Corn exports out of Manchuria continued to Japan, North Korea, South Korea, Russia, and other Asian ports.

#### ***Corn Production Forecast To Decrease in 1993***

Corn is likely to be produced on 20.5 million ha, down 500,000 ha, because of cultivated area lost to factory sites, housing, and new roads. Also farmers in Manchuria are expected to switch some area from corn to soybeans because of falling corn and rising soybean prices. Yields are projected at 4.5 metric tons per ha, about the same as in



1992. Output is projected at 92.5 million tons, a 3-percent decrease from 1992.

Corn exports in 1993/94 may decline somewhat as production falls and competition from large supplies of feed wheat in world markets continues. But high stocks and a penchant for foreign exchange likely will drive China to ship about 8.5 million tons. Major export destinations include South Korea, North Korea, Japan, Russia, Malaysia, and other Asian ports.

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# No Change in Oilseed Output Forecast for 1993

*Oilseed production in 1993 is expected to remain virtually unchanged from 1992. Increases in soybean prices in 1992 expanded sown area in 1993. Cotton and rapeseed area declined. Trade will be more active in 1993 as the government relinquishes its monopoly control over exports and imports of oilseeds, vegetable oils, and meals. China's 1992 oilseed production fell by 5 percent because of drought, boll weevil infestation, and disease, with cottonseed production accounting for a majority of the decline. [Shwu-Eng H. Webb]*

## Oilseed Production Decreased in 1992

Drought and pest infestation in 1992 offset the production gains from a small increase in sown area. Consequently, oilseed production, which includes cottonseed, soybeans, rapeseed, sunflower seed, and peanuts, decreased by 5 percent to 32.8 million metric tons (mmt) from 34.5 mmt in 1991 (appendix table 3).

The most drastic decline in production was experienced by cottonseed, down 21 percent because of severe bollworm infestations in major producing areas. Peanut production also suffered a significant decline in 1992. It fell 6 percent from 1991 because of severe drought in the leading growing province of Shandong, which accounted for 30 percent of production in the 1980's. Rapeseed continued to increase despite a slight decrease in area. Rapeseed's share of oilseed production increased from 16 percent in 1988 to 23 percent in 1992 (table 10).

Improved yield and expanded acreage soybean production to increase 6 percent from 1991. With relatively lower returns compared to other oilseeds and grains, sunflower area continued to decrease. A 3-percent decrease in area combined with a serious disease problem in the north-eastern region, cut sunflower production 17 percent to 1.18 million tons.

## Exports of Oilseeds Declined Sharply in 1992

Rapid growth in China's meat production, up 9 percent in 1992, continues to increase domestic demand for oilseed meals. Total oilseed exports declined from 1.2 million tons in 1991 to 0.8 million tons in 1992. Two years of relatively short soybean crops combined with strong domestic feed demand, resulted in soybean exports declining rather sharply from 869,000 tons in 1991 to 500,000 tons in 1992.

Unlike other oilseeds, which are mainly crushed for oil, only slightly over half of peanut production is crushed. In the last decade, China was one of the world's largest exporters of peanuts for food consumption. Several years of continuous increases in exports have depleted peanut stocks. In addition, the decline in 1991 production reduced peanut exports 30 percent to 300,000 tons in 1992. All other oilseed exports remained at low levels--about the same as 1992.

## Overall Trade in Oils and Meals Decline in 1992

Good harvests of oilseeds in 1990 and 1991 contributed to a plentiful vegetable oil supply and reduced imports 7 percent to 1.3 million tons in 1992. The depreciation of the yuan and the increase in vegetable oil tariff also contributed to lower oil imports.

Meanwhile, total oilmeal exports declined 7 percent to 2.7 million tons in 1992. The desire to improve domestic livestock feed protein content and government policy in returning oilseed byproducts to farmers reduced the supply of meals available for the trade companies to export.

**Table 10--China's oilseed production and trade for 1992 and forecasts for 1993**

Indicator	92/93	93/94
million tons		
Total oilseed 1/		
Production	32.746	33.120
Imports	0.305	.300
Exports	0.845	1.090
Soybeans	July/June	
Production	10.300	11.000
Imports	0.300	0.300
Export	0.500	0.700
Cottonseed	Jan/Dec	
Production	7.664	7.770
Imports	0.000	0.000
Exports	0.005	0.020
Peanuts	Oct/Sep	
Production	5.953	6.300
Imports	0.000	0.000
Exports	0.300	0.300
Rapeseed	Oct/Sep	
Production	7.653	6.700
Imports	0.005	0.000
Exports	0.020	0.050

Sources: USDA.

1/ USDA, includes soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed.



### ***Oilseed Production Likely to Increase in 1993***

Oilseed area in 1993 is expected to remain about the same as 1992. After the elimination of direct price subsidies on vegetable oil consumption, cotton is the only oilseed over which the government still has some control. Fearing that procurement stations will use IOU's again and wary of the possibility of another bollworm infestation, farmers shied away from planting cotton. Cotton area fell rather sharply, dropping 18 percent to 5.6 million hectares (ha) in spring 1993. The shortfall in soybean supply in 1991 and 1992 and rising demand as a feed component pushed up prices in open markets in 1992, which will likely increase sown area in 1993/94 by 8 percent to 7.8 million ha. Total oilseed output is forecast at 33.07 million tons about the same as for 1992.

Rapeseed production steadily increased after 1989, with relatively large stocks, market prices decreased in 1992. In 1993, rapeseed area is expected to decline by 10 percent to 5.4 million ha and production will likely decrease by the same percentage. Peanut area is expected to be only slightly lower than last year, but better yields in 1993 should boost production to 6.3 million tons.

There was a relatively small impact on market prices of raising coupon prices by 158 percent to eliminate urban edible oil price subsidies. Urban consumers now purchase higher quality cooking oils from the open markets, and as a result government stores have inferior vegetable oils in surplus. No shortage of oilseeds and their products is expected in the next few years. China is likely to use pricing policies to maintain oilseed sown area at about the current level for the next few years.

### ***Outlook for Long-Term Increased Oilseed Output***

The outlook for China's production and consumption in the longer term--5 to 10 years--is very different from the short term. Urban per capita consumption of grain and edible oil has been subsidized at a very high level. The government has continued to raise procurement prices to encourage farmers to produce enough grain and oilseed. The recent policy measures replacing commodity-specific subsidies with cash compensation and gradually raising coupon prices to the market level, will cut consumption of inferior

goods such as rice in urban areas. Income growth in the next 5 to 10 years will further reinforce the changes in consumption patterns. Income elasticities for oilseed crops are much higher than for staple grains such as rice and wheat. The high income elasticities for meats would also cause the derived demand for corn and soybeans to increase. Areas sown to grains other than corn would likely decline in favor of more oilseed and corn to support livestock production.

### ***Trade of Oilseed, Vegetable Oils, and Meals Likely To Be More Active in 1993***

Net exports of oilseeds will likely decline in 1993 because an increasing portion will be crushed for livestock feed. With the erosion of CEROIL's (China National Cereal and Oil Import and Export Corporation) monopoly power, local trade companies in the surplus oilseed regions of Northeastern China will export directly to neighboring countries. Exports of oil meals from feed mills in the Northeast will also likely increase. On the other hand, import demand for oilmeals in the rapidly growing livestock southeastern region will increase and provide an opportunity for U.S. oilmeals and oilseeds.

With population growth, a slight decrease in oilseed production and vegetable oil stocks, imports of edible oils are likely to increase in 1993. However, the emphasis will be on the cheaper palm oils. The rapidly growing livestock and aquatic sectors continue to soak up the larger supply of meal from the increased domestic crushing of oilseeds. Meal exports are expected to decrease in 1993. The most important factor will be demand from the fast-growing meat sector. China's Government is also allowing peasants to retain more oilseed byproducts when seeds are brought to mills for crushing, which reduces export availabilities. The export of oilmeals will likely be the same in 1993.

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# Discouraged by IOU's and Pests, Cotton Farmers Cut 1993 Area

*China's 1992/93 cotton production fell by 20 percent due to severe drought and cotton bollworm infestation. Discouraged by pests, no increase in procurement prices, and government use of IOU's, cotton farmers will likely use fewer inputs and substantially reduce area in 1993. [W. Hunter Colby]*

## Drastic Decline in Cotton Output

China's 1992/93 (August-July) cotton production was significantly lower than earlier estimates. Despite a 4.5-percent increase in sown area to 6.84 million hectares (ha), serious drought and bollworm (*Heliothis Armidera*) infestation in many of the major cotton producing provinces reduced output 20.6 percent to 4.5 million tons (table 11). The 1992/93 yield of 659 kilograms (kg) per ha is the lowest since the 1982/83 season.

The drought and insect damage was concentrated in the northern growing region. The hardest hit were Shandong, Henan, and Hebei, where cotton output in each province fell 30-50 percent from the previous year (table 12). Damage was so severe in Shandong that peasants reportedly pulled up over 130,000 ha of dead plants midway through the growing season and attempted to replant with other crops. Production increases in the east and central regions only partially alleviated the reductions.

Cotton procurement in 1992/93 saw the widespread reappearance of IOU's. In lieu of cash, IOU's were given to farmers by the state cotton procurement agency, the Cotton and Jute Corporation. The cash shortages reportedly arose because of the misappropriation of funds (shifting cotton procurement funds to more profitable investments in rural village and township industrial enterprises) and rising operating losses at cotton and jute purchasing stations due to reductions in government subsidies.

Grain procurements were also afflicted with widespread use of IOU's. The central government was worried about declining in per capita peasant incomes and the increasingly slim margin between production costs, particularly rising input costs, and crop procurement prices. Therefore, it put intense pressure on provincial and local governments, as well as the grain and cotton purchasing stations, to redeem all IOU's prior to the Chinese New Year (January 27). Press reports asserted most IOU's were exchanged for cash prior to the New Year's deadline, though a number of recent reports note the exchange was not completed even several months later. Accordingly, 1992/93 cotton procurements have progressed much more slowly than in recent years, and the central government has stated that total procurement is expected to be lower than normal. However, the government's near monopoly on cotton marketing insures that the vast majority of the 1992/93 crop will still move through official channels.

## Yarn Production Recovers

China's total yarn output rose 6.3 percent to 4.9 million tons in calendar 1992, exceeding the government's target by about 750,000 tons. Yarn output in late 1991 was reduced under intense pressure from the central government to push textile products out of storage rather than producing new ones. This policy ended in early 1992, with production over the remainder of the year at normal to slightly increased levels (figure 7).

## Cotton Imports Plummet in 1992/93

China's 1992/93 cotton imports fell dramatically because of high stock levels (evident in the stocks-to-use ratio of 63 percent) and widespread overstocking of cotton yarn, cotton cloth, and textile products. Stocks expanded because yarn output grew faster than demand. Demand for yarn fell because poor quality cloth and textile products could not be sold and were simply warehoused. Total 1992/93 imports are estimated at 60,000 tons, down 83 percent from the previous year (table 11). Conversely, China's cotton exports rose from 131,000 to 152,000 tons because of excess supply. Although exports increased over 16 percent, they might have been higher had the margin between domestic and world prices been more favorable. China's cotton traders must now operate on a for-profit basis following the government's elimination of direct export subsidies.

Cotton yarn exports in 1992/93 are expected to decline more than 20,000 tons to about 151,000 because of less demand in many of the traditional importing nations in Asia. Textile and apparel product exports, on the other hand, continued a strong upward surge, particularly to the United States. China is the number one supplier to the United States, exporting \$4.6 billion worth of goods in 1992, up

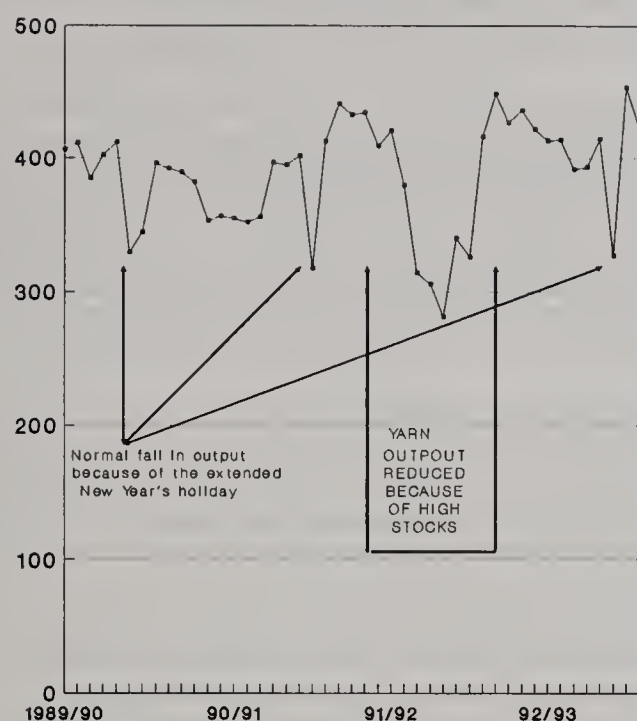
Table 11--China's cotton supply and utilization

	1990/91	1991/92	1992/93	1993/94
	1,000 tons			
Beg. stocks	953	1,384	3,153	2,887
Production	4,507	5,683	4,507	4,355
Imports	480	355	60	217
Consumption	4,354	4,137	4,681	4,790
Exports	202	131	152	152
End. stocks	1,385	3,153	2,887	2,517

Official USDA estimates (WASDE); 1993/94 forecast.



Figure 7  
China's Monthly Yarn Production



Source: China Monthly Statistics, SSB

Table 12--Cotton output, selected provinces, 1988-1992

Province	1988	1989	1990	1991	1992
1,000 tons					
Shandong	1,137	1,025	975	1,351	677
Xinjiang	278	295	469	639	668
Henan	637	527	676	948	659
Hubei	362	313	517	491	610
Jiangsu	562	485	464	557	527
Hebei	577	536	571	634	306
Anhui	206	170	236	271	263
Hunan	44	67	120	149	203
Sichuan	88	85	115	146	151
Shanxi	87	102	112	112	95
All others	171	183	253	377	349
Total	4,149	3,788	4,508	5,675	4,508

Sources: China Statistical Yearbook, 1989-92; 1993 China Statistical Summary

from just over \$2 billion in 1988. Exports exclude an estimated \$2 billion more in illegal or falsified country-of-origin shipments. Wu Wenying, Minister of Textile Industry, stated China's total 1992 textile and apparel exports increased 20 percent over 1991 to nearly \$31 billion.

### Outlook for 1993/94

At the March 1993 National Conference on Cotton Production, the government announced a target of 5.6 to 6 million planted ha for 1993 versus 6.84 million in 1992. Provincial area plans are no longer mandated by the central government, though provincial governments can expect substantial persuasion to meet the national target. A plant-

ing intention survey conducted by the Ministry of Agriculture in early 1993 estimated that 1993/94 cotton area would fall more than 16 percent to 5.67 million. This is the first time the Ministry published survey results in the early spring, so there is no historical record to judge its accuracy.

Many domestic press reports throughout the fall and winter indicated rising peasant dissatisfaction with cotton. Given the widespread use of IOU's, losses due to bollworm and drought, and the fact that the central government will not increase the 6000 yuan/ton official base procurement price for this year, the 1.1 million ha reduction in 1993/94 cotton area seems reasonable, if not conservative.

The State Council and the Ministry of Agriculture announced cotton production targets of 5 million tons for 1993/94. However, given the reduced area, and assuming relatively normal yields of 778 kg/ha, 1993/94 production may fall to 4.35 million tons.

A significant number of unknowns continue to complicate this picture. How frustrated are China's cotton growers over decreasing returns and the use of IOU's? Will that discontent, combined with steadily rising input costs, move peasants to reduce fertilizer and pesticide use, increasing the chance of below normal yields? The picture is even murkier because it is unclear whether the 1992/93 boll worm outbreak was a cyclical population increase that will not be a problem in 1993/94 or else the beginning of a long term infestation. If it is the latter, as some recent reports suggest, how quickly and effectively can the government initiate a campaign, either through local governments or through the agricultural extension service, to educate cotton farmers on managing the infestation? Unfortunately, information currently coming out of China is insufficient to answer these questions.

Despite the potential for China's cotton production to fall below the state target of 5 million tons, there will not be a shortage. The current stocks-to-use ratio is nearly 62 percent. Even if 1993/94 production remains near 1992/93 levels and consumption climbs to 4.8 million, China still will have adequate stocks.

Therefore, cotton supply should not depress consumption in 1993/94. However, all yarn and textile producing provinces will not have equal access to raw cotton. In addition to the traditional problem of transportation bottlenecks, the 30 to 50 percent of yarn mills in financial trouble will find it difficult to procure raw cotton supplies because producer provinces are increasingly reluctant to deliver to those with a history of poor payment.

### An Overview of Policy Changes Announced for 1993/94

The policy situation in China became even more opaque and difficult to understand following the poor 1992/93 harvest. Early in 1992/93, when officials assumed cotton would have another bumper crop, a wide range of provin-

cial-level programs and "experiments" in cotton marketing were announced. To forestall a rush by cotton growers into other crops, provinces and the central government are assuring peasants in the major growing regions that financial incentives for cotton will not be reduced in 1993/94.

Here are some of the cotton marketing, distribution, and pricing changes announced for 1993/94. Despite some liberalization, they demonstrate the continued pervasiveness of government interference.

1. Mandatory state procurement of cotton cloth will be abolished.
2. The price for cotton purchases in excess of fixed quota procurements and purchases for state reserves will be determined by market forces, except that a minimum floor price of 10 percent below the state fixed price will be in effect. Over the next 2-3 years, the state will phase out state-fixed prices. However, the central government, at least in the near future, will support cotton farmer incomes by acting as the guaranteed buyer of last resort.
3. Price ceilings for open market (non-state) sales of agricultural inputs, including fertilizers, pesticides, plastic sheeting, and diesel oil, will be instituted.
4. The Ministries of Textile Industry and Light Industry will be replaced by the China Chamber of Textile Industry and the China Chamber of Light Industry (apparently with little real change in responsibility, at least for the near term).
5. Central government policy dictates that, except under special approved circumstances, provincial and local cotton procurement price add-ons must be eliminated.
6. For cotton procured by the state, provinces are allowed either to transfer the stipulated amount of agricultural inputs to the cotton farmer, as in the past, or may convert the value to cash. If it is given to the farmer as cash, it must not be included within the state fixed price (it must be separate and in addition to the state price). For cotton, the cash equivalent will be 240 yuan per ton.
7. As an experiment, the central government authorized Shandong province to eliminate the fixed quota purchasing and intra-province allocation system in favor of "guided" planting, procurement, and allocation. Prices will be determined through negotiation between buyers and sellers within floor and ceiling prices set by the provincial government. The provincial Cotton and Jute Corporation is charged with fulfilling the state's mandatory allocation plan (both intra- and inter-provincially). All cotton producers may sell their output to any authorized purchaser. And finally, a wholesale cotton market will be established in Jinan. Cotton price deregulation was also authorized for Henan and Jiangsu provinces, though as in Shandong they will likely impose floor and ceiling prices.
8. In addition to the state cotton reserve system established several years earlier, the provinces are now tasked with

creating a provincial system of reserves equivalent to at least 6 months of demand, both to establish a market stabilizing instrument and to transfer some of the cost of holding stocks to the provinces from Beijing.

9. Control over cotton imports and exports has been devolved to the provinces, though the central government is apparently still using its "approval" authority to keep trade within state plans. Nevertheless, assuming that 1993/94 cotton production comes in close to the official planned target, then the central government will likely gradually move ahead with cotton marketing reforms and allow more independent trade decisions by the provinces.
10. The subsidy paid by importing provinces to exporting provinces for cotton transfers was raised from 500 yuan/ton to 600 yuan/ton in order to alleviate financial losses, and the resulting reticence to abide by the state allocation plan, of cotton-surplus provinces.

Official statements and news reports in early 1992/93 asserted that China would immediately begin to liberalize the cotton economy. However, the production and procurement difficulties encountered during the latter part of the marketing year caused a notable retreat in the calls for reform (see the 1992 China Situation and Outlook Report, July 1992, for an enumeration of the reforms proposed during the earlier period of optimism). The most recent proposals for liberalization listed above are less far-reaching than those aired last year, though to date there has not been any definitive withdrawal by the central government of the earlier more liberal reforms. Given the increased pressure by the central government on local and provincial officials to prevent a recurrence of last year's problems, however, it seems likely that only the more modest reform initiatives, if any, will actually be implemented for 1993/94. Until more information becomes available on exactly which reforms have been approved and are actually being implemented, as opposed to simply proposed or approved but not implemented, it will continue to be exceedingly difficult to forecast China's cotton economy.

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# Sugar Sector Liberalized—Production Off But Exports Rise

*Sugar production fell 2.3 percent in 1992/93 as retail sugar prices, decontrolled in late 1991, slipped dramatically in response to high stocks. Total sugar crop output fell about 1 percent as low procurement prices moved farmers into more profitable crops. Although prices will rise slightly in 1993/94, the increase may not be enough to prevent additional declines in area and production because of competition from nonagricultural projects and peasants shifting to other more profitable crops. [W. Hunter Colby]*

China's 1992/93 (October/September) sugar output is expected to fall slightly from the record 1991/92 level. USDA estimates, based in part on Ministry of Light Industry (MLI) monthly sugar output statistics, are for 8.3 million tons (raw value), a 2.3-percent decline from 1991/92 (table 13). Marketing and price reforms introduced in 1991 and 1992, combined with record output in 1991/92, cut sugar crop and refined sugar prices. Lower prices reduced beet area and output.

Sugarcane production in 1992/93 was 73 million tons, up from 67.9 in 1991/92 (table 14). Area climbed from 1.16 to 1.25 million hectares (ha). Sugarcane production fell in Guangdong Province because of lower procurement prices and government input subsidies, and large sugar stocks. Cane area in Guangdong has increasingly come under pressure from expanding rural enterprises, new roads, and widespread building and housing starts. Pressure to take land out of crop production has been particularly intense in eastern Guangdong and in the Pearl River Basin area.

Increases in Guangxi and Hainan more than made up for Guangdong's shortfall. Cane production in Yunnan is expected to be the same as in 1991/92, while output in Fujian could fall slightly, for much the same reasons as in Guangdong.

Sugarbeet area declined 16 percent to 660,000 ha. A moderate increase in yields kept output at 15 million tons, down 7.9 percent from 1991/92. Area and production de-

clined in every major province except Xinjiang because of lower prices following the record 1991/92 crop, unattractive returns relative to other competing crops, and delayed payments to beet farmers. Production in Xinjiang increased an estimated 24 percent in 1992/93 because of relatively higher procurement prices, continued provincial government support for expanding irrigation, and availability of improved beet varieties. Procurement prices were also likely bolstered in Xinjiang by strong demand for sugar exports to Russia and Kazakhstan and increased profits for the farmer because of rapid yield growth.

## Sugar Production Drops Off

Lower beet output in 1992/93 is expected to reduce total sugar output. Although statistics are not yet available for the entire refining season, data for February and March were significantly lower than during 1991/92. Although October through January output was above the previous year, the net change will be a slight decrease in total sugar output (figure 8).

Guangdong province reportedly completed the majority of its refining earlier in the season than normal, perhaps explaining the increase in monthly sugar output between October and January and then the sudden decline in February (figure 8). The important refining months, March, April, and May, probably were lower than normal. About 98 percent of China's annual sugar output is produced between October and May.

## Sugar Imports and Exports Decline

During the first half of 1992/93, sugar exports were running 198 percent above a year earlier because of the decentralization of trading authority. However, recent information from China suggests that the decline in 1992/93 sugar output will dampen exports during the second half of the year. The year's total is estimated at 1 million tons, down 150,000 tons from the previous year. Exports will not fall further because of increased barter trade with the former Soviet Union, low domestic prices, and dramatic declines in the government-sanctioned swap market (semi-official exchange rate) and black market values of the yuan.

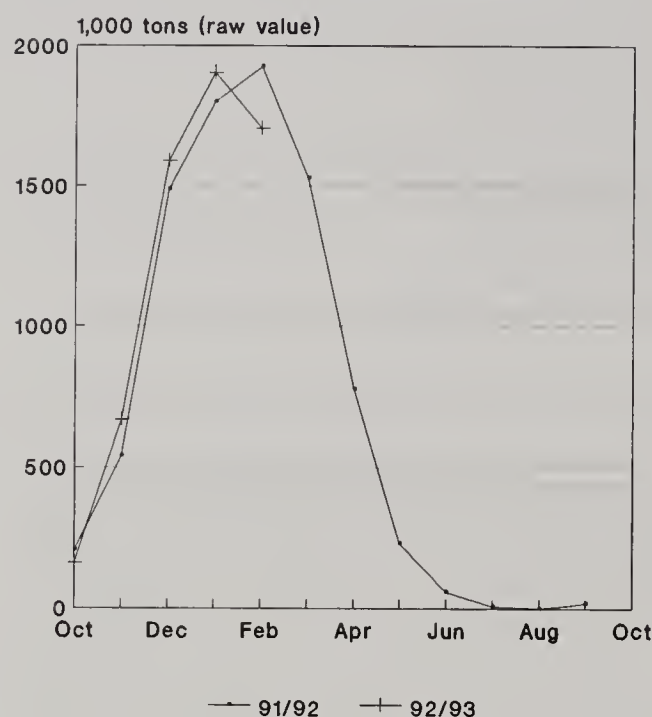
Sugar imports in 1991/92 climbed to 1.2 million tons from 1.06 the previous year. Imports in 1992/93, however, are

Table 13--China's sugar supply and utilization

Item	1990/91	1991/92	1992/93	1993/94
1,000 metric tons, raw value				
Beg. stocks	1,350	1,350	2,272	2,572
Production	6,765	8,492	8,300	7,550
Imports	1,055	1,230	1,000	1,100
Consumption	7,500	7,650	8,000	8,100
Exports	320	1,150	1,000	500

Official USDA data (WASDE). 1992/93 and 1993/94 are estimates

Figure 8  
China's Monthly Sugar Output



Source: China Monthly Statistics, SSB.

Table 14--China's beet and cane production and sugar output

Item	1990/91	1991/92	1992/93	1993/94
1,000 metric tons, raw value				
Total sugar	6,765	8,492	8,300	7,550
Beet sugar	1,522	1,815	1,650	1,550
Cane sugar	5,243	6,677	6,650	6,000
Beet output	14,525	16,289	15,069	14,000
Cane output	57,620	67,898	73,011	62,000

Sources: 1993 China Statistical Summary; 1993/94 data are official USDA forecasts

forecast to fall to 1 million tons, based on data from the first 5 months of the year and large stocks. Imports are tightly controlled by the central government to protect domestic producers. Most of China's imports are raw sugar (98 percent in 1991/92) brought in for refining and reexport. That is expected to continue in 1992/93 as refineries use excess capacity.

#### Outlook for 1993/94

Dramatic reform of the state-controlled sugar sector in 1992 altered the way farmers, mills, refineries, wholesalers, and retailers approach production and sales decisions. In late 1991, the central government eliminated retail sugar subsidies, removed government-set refined sugar allocation quotas, and decontrolled retail sugar prices and province-to-province transfers. The government also instituted a state price around which commercial enterprise sugar purchases from refineries could fluctuate 10 percent.

Although not part of the government's reform package, many mills began to procure beet and cane at significantly less than the government-set price because of declining retail prices after the government's reform of ex-factory pricing. Some mills, squeezed by the low sugar prices and high raw material costs, offered 15-20 yuan/ton less than the state-set prices for beet and cane. And by July 1992, burgeoning retail supplies had pushed ex-refinery sugar prices down to 1500-1600 yuan/ton, far more than 10 percent below the government's guidance price.

Reduced returns because of lower beet and cane procurement prices, as well as the widespread use of IOU's in the northeastern beet-growing region, will likely reduce both cane and beet sown area in 1993/94. However, retail sugar prices and sugar crop procurement prices are expected to increase somewhat for 1993/94, though not enough to completely counteract the move to reduce cane and beet area. The only exception to the decline in area may again be Xinjiang, where demand for sugar in barter trade from the former Soviet Republics kept prices higher in 1992/93. Total beet sown area is expected to fall to 650,000 ha, while cane drops to under 1.1 million ha.

Assuming average yields for cane and beet in 1993/94, total sugar crop output will likely reach 76 million tons, down 14 percent from the 1992/93 crop. Although average procurement prices are expected to increase 5-10 percent over 1992/93, this will not be enough to forestall additional reductions in area. Estimates are for continued erosion in cane area, particularly in Guangxi Province, where farmers had already planted their 1992/93 crop when cane prices were reduced. Therefore, Guangxi area in 1993/94 should see a decline similar to the 1992/93 reduction in Guangdong province. The fact that cane procurement prices are only expected to increase slightly suggests a further 100,000 ha coming out of cane. Beet area should decline, though likely only by 10,000 ha.

Sugar output is expected to decline to about 7.6 million tons, 700,000 tons less than 1992/93, and nearly 900,000 tons below the record 1991/92 output. Cane and beet recovery rates are expected to be similar to 1992/93.

Sugar consumption should increase slowly in 1993/94 as the population expands, the food processing industry grows, and per capita incomes rise. The removal of the sugar subsidy is not expected to eliminate growth in consumption--merely reduce it in the short term. China is likely to increase imports and reduce exports to make up for some of the shortfall in domestic production. In addition, central government controls on saccharin reduced 1992 output to an estimated 10,000 tons, a decline of 2,000 tons (about 600,000 tons in sugar equivalent). Output will likely continue to fall in 1993. Despite the expected fall in sugar production in 1993/94, imports are not expected to rise sharply because the large stocks will dampen import demand. China signed a 700,000-ton import agreement with Cuba for 1993, in addition to approximately 200,000 tons from the 1992 agreement still pending shipment, so China's total sugar imports could rise 100,000 tons to 1.1 million. However, Cuba recently an-



nounced a severe drop in cane production and the difficulty it will have fulfilling delivery on its trade agreements. This raises the possibility of China turning to alternative suppliers or reducing imports. Exports in 1993/94 will likely fall 500,000 tons to 500,000 because of soft international prices and increased domestic demand.

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## Government Tightens Controls on Tobacco Sector

*Another bumper tobacco harvest in 1992 prompted government calls for reducing production and area. Growth in cigarette output and factory profits continues to slow as the government tobacco monopoly reigns in unauthorized cigarette output and rampant smuggling of foreign brands. Cigarette supply continues to outstrip demand, particularly at the low end of the market. [W. Hunter Colby]*

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Total tobacco leaf area in 1992 rose an estimated 4.8 percent to 1.89 million hectares (ha), 45 percent higher than the government's target of 1.3 million hectares (table 15). High yields pushed leaf production up 12.7 percent to a record 3.42 million tons, more than 400,000 tons above the government target. Flue cured leaf output in 1992 rose 17.7 percent to 3.1 million tons, while estimated consumption was only 1.8 million tons. Exports and stocks rose sharply from 1991 levels.

Despite an average increase in output of 14.1 percent in the last 2 years, cigarette production in 1992 only rose 1.9 percent to 32.9 million cases (250 cartons per case and 200 cigarettes per carton). Traditionally, many rural communities have promoted tobacco production and established cigarette factories in order to take advantage of the large amount of tax revenue generated by these activities. The modest 1.9-percent growth in output reflects China's 1992 Tobacco Monopoly Law, which strictly limits the issuance of cigarette production and transportation licenses.

Total leaf exports surged to 110,000 tons in 1992 from 72,570 in 1991. Exports have risen steadily as China has developed new markets in Southeast Asia and the former Soviet Union. China's total tobacco and cigarette trade in 1992 reached \$966 million. Cigarette exports climbed from 16 billion pieces in 1992 to nearly 20 billion in 1992

as domestic production continues to outstrip demand. Demand for lower quality brands, which constitute a large share of output, has slackened as personal incomes have risen, stimulating additional exports. Imports rose from 5.3 billion pieces in 1991 to 8 billion in 1992 because of a rising preference for foreign brand tobacco products.

Central and provincial government crackdowns on smuggling resulted in increased numbers of intercepted shipments and arrests, though huge profits available make it unlikely that current enforcement efforts will have much impact. In addition, the central government admitted that local officials sell confiscated foreign cigarettes rather than turning them over to the Tobacco Monopoly.

### Production and Trade Outlook for 1993

Tobacco leaf production in 1993 is expected to increase to 1.94 million ha, despite the central government's push to rein in area. Local areas push production because tobacco generates large amounts of local tax revenue. The central government also plans to continue to crack down on uncensored cigarette factories in rural areas. Nevertheless, cigarette production is likely to grow, though at a slower pace.

In general, government policy for 1993 revolves around re-centralizing some of the controls over tobacco and ciga-

Table 15--China's total and flue cured tobacco area and production

Item	1990	1991	1992	1993
Mil. ha/tons				
Total				
Area	1.593	1.804	1.891	1.935
Production	2.627	3.031	3.415	3.560
Flue cured:				
Area	1.342	1.562	1.660	1.706
Production	2.259	2.670	3.142	3.300

Official USDA data (WASDE). 1993 data are estimates.

rette production and distribution. These policies include: 1) all localities must adhere to the Tobacco Monopoly Law and cannot establish or operate unauthorized cigarette factories; 2) prices for tobacco purchased outside the state plan must be lowered 20 percent (to induce a reduction in area), and all tax revenue obtained from those purchases by local governments must be turned over to the central government; and 3) a business license issued by the Tobacco Monopoly is required to engage in any retail sale of foreign cigarettes.

China's tobacco and cigarette exports are expected to continue to grow in 1993. By mid-1993, total leaf stocks are likely to surpass 1 year's consumption, driving prices down and fostering exports. China's tobacco exports will continue to its traditional Asian and European markets. Ex-

ports to the United States are small, though they did rise from 2,240 tons in 1991 to 4,600 in 1992. China's tobacco imports are expected to continue above 1992 levels as factories strive to improve cigarette quality by blending foreign leaf. Most of China's imports will come from Zimbabwe, traditionally the most important supplier. Blue mold prevents the United States from exporting tobacco to China.

China's cigarette trade will also expand in 1993. Demand for foreign brands is expected to stimulate official imports and smuggling of foreign cigarettes.

China's cigarette exports will also continue to expand. Exports to the former Soviet Union should rebound somewhat as China expands barter deals with cash-strapped republics. China is also making a concerted effort to expand its export markets in Southeast Asia, the Middle East, and Europe.

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# Rapid Growth in China's Livestock and Feed Sectors

*China's livestock inventory and meat production will continue rapid growth in 1993. Market deregulation has improved livestock producer incentives and rising consumer incomes are increasing demand. Livestock and meat exports declined because of cash shortages in the former Soviet Union. The government continues to limit imports. [W. Hunter Colby]*

## Healthy Inventory and Meat Output Growth Continue

China's livestock and feed sectors experienced another year of robust growth in 1992. Bumper grain harvests during the last 4 years, liberalized grain prices, increases in free market meat procurement, and more consumer demand for meat all fostered rising livestock inventories and meat output. Higher quality feeds, better herd management, sustained market and distribution reforms, and breed improvement programs contributed to China's growth in meat production.

The official eighth 5-year plan (1991-95) for total meat production is 30 million tons; however, output in 1992 reached nearly 33 million tons, already 10 percent above the target. Pork, beef, mutton, and poultry production grew rapidly, increasing 7.4, 10.7, 10.2, and 12.1 percent above 1991, respectively (table 16). The 1992 growth rates of beef and poultry output were higher than pork, in line with government plans to foster more efficient feed-to-meat conversion. The removal of government meat subsidies in many large cities had little effect on consumption as higher incomes offset the effects of higher prices. Stable or increasing profits for producers expanded supply. China's total meat output (excluding eggs and aquatic products) on a per capita basis rose 35 percent in the last 5 years--from 20.9 kilograms in 1987 to 28.2 in 1992.

China's hog sector continues to be dominated by relatively small producers. However, the number of larger and more efficient specialized livestock households and commercial operations is rising rapidly. Likewise, use of improved breeds is more widespread because consumers demand leaner cuts of pork.

The hog slaughter rate (beginning inventory divided by total slaughter) in 1992 was 94.1 percent, up from 90.8 in 1991, though still well below the 150 percent rate or more in many developed countries. Slaughter of 348 million head surpassed the official 1995 plan target of 320 million, and was only 12 million short of the target set for the year 2000. The central government continues to support a policy of raising slaughter weight, controlling growth in inventory, and increasing slaughter rates.

Cattle inventory underwent another year of dramatic growth. Most of this occurred in farming rather than grassland areas because of the availability of forage and feedstuffs. Government policy promotes the development and

use of a variety of non-grain feedstuffs, including ammoniated straw and green fodder stalks. Dairy cow inventory rose 10.3 percent in 1992, while milk output rose 7.6 percent.

Sheep inventory did not increase in 1992, though higher slaughter rates increased mutton output by more than 10 percent. Sheep inventory has gradually declined since 1989 because of low wool prices and the concentration of mutton consumption in only a few northern and western provinces. However, rising slaughter weights and rates have kept meat production on the upswing, in large part because of central and provincial government policies aimed at settling nomadic herders, improving herd management, and supporting breeding programs.

Ample grain supplies and increased demand for better quality feedstuffs have supported continued growth in manufactured feed production. China's approximately 6,200 feed mills produced 39 million tons, an increase of 11.7 percent from 1991 (table 17). This exceeds the 7-percent annual manufactured feed production target issued by the Ministry of Internal Trade (formerly the Ministry of Commerce), which controls the bulk of China's modern feed mills.

## Livestock and Meat Exports Fell in 1992

China's fresh, chilled, and frozen meat exports declined in 1992 as sales to the former Soviet Union fell dramatically (table 18). Credit and foreign exchange shortages in the republics of the former Soviet Union have reduced incentives for China to trade, while increased profits available

Table 16--China's livestock inventory and meat output

	1989	1990	1991	1992
1,000 head/tons				
Yearend inventory:				
Hog	352,810	362,408	369,646	384,210
Cattle	100,752	102,884	104,592	107,640
Sheep/goat	211,642	210,021	206,210	207,330
Meat output:				
Pork	21,228	22,811	24,523	26,353
Beef/veal	1,072	1,256	1,535	1,803
Mutton	962	1,068	1,180	1,250
Poultry	2,820	3,229	3,950	4,125

Sources: 1992 China Statistical Yearbook; and 1993 China Statistical Summary.

**Table 17--Manufactured feed production, 1989-92**

Item	1989	1990	1991	1992
Million tons				
Total /1	31.0	32.0	34.9	39.0
Compound	18.6	na	na	na
Mixed	12.4	na	na	na

1 Totals may not equal the sum of the parts because of multiple sources and rounding.  
na = data not available.

Sources: 1992 China Agriculture and Trade Report, USDA/ERS, July 1992; and US Feed Grains Council, Beijing.

**Table 18--Livestock and meat exports, 1990-92**

Item	1990	1991	1992
1,000 head/tons			
Live cattle	na	174	na
FCF beef 1/	97	132	30
Canned beef	na	64	na
Live hogs	3,000	2,850	2,900
FCF pork 1/	124	117	50
Canned pork	91	128	53
Live poultry	47,840	47,520	51,770

1 Fresh, chilled, and frozen meat. na = not available.

Sources: China's Customs Statistics and Livestock Semi-Annual and Annual Reports

in the domestic market also contributed to the decline in exports. With most urban areas free of government price controls on retail sales of meat, traditional exporters may be choosing to supply meats to the domestic market instead.

### **Production and Trade Outlook for 1993**

The outlook for the livestock and feed sectors in 1993 is for continued rapid growth in inventory, slaughter rate, meat output, and manufactured feed production. The expected high rate of economic growth in 1993 will raise meat demand and producers will respond with increased slaughter and meat output.

Government policies include: promoting rapid development of livestock production in the northeastern corn-surplus provinces; limiting state subsidies by reducing the ratio of state-to-free market hog procurements; pushing major metropolitan areas to reach at least 30 percent self-sufficiency in meat production with the remainder supplied by rural producers; and promoting the development of regional and national livestock product wholesale markets.

Despite government policy to reduce hog inventory growth, it will likely increase in 1993 in response to added

demand for meat products by urban residents and the surplus of on-farm grain stocks and relatively low grain prices. Low grain prices mean many peasants will feed livestock rather than sell grain to the state.

Dairy cattle inventory should increase in order to supply urban areas with fresh milk and rural areas with powdered milk. However, producer and consumer fresh milk prices, regulated by the government, are set at a level too low for dairy farms to utilize better quality dairy feeds or modernize and expand operations. Beef cattle inventory and beef output are also expected to increase rapidly, though sheep inventory will probably be stagnant or even decline slightly in 1993.

Demand for poultry and eggs will rise sharply, driven by increased urban demand and supported by the government's policy of promoting poultry as the most feed-efficient means of meat production. Large, efficient poultry operations have been established near most major metropolitan centers. Municipal government policies supporting poultry meat and egg production will keep output growth high in 1993.

Although demand for meats had been increasing in urban and rural areas, per capita consumption remains much higher for the urban population. Demand for meat in urban areas will increase, but rising incomes among China's 800 million rural residents are expected to be the driving force in the future.

China's livestock and meat exports will likely remain flat in 1993. The republics of the former Soviet Union are not expected to resolve their fiscal difficulties, and exporters will likely divert meat to the domestic market. Imports are expected to remain nominal. Discussions with the United States under the 301 market access process may lead to a reduction in China's high tariff rates and unusually strict quarantine regulations. Ultimately, this may allow U.S. live animal and meat exports to increase, though significant U.S. shipments remain unlikely.

The brightest spot in the U.S. export picture is the steady increase in China's imports of cattle skins and hides. Growth in China's exports of leather goods, particularly leather athletic shoes, combined with the low quality of domestic supplies, will keep China's demand for high-quality cattle hides and skins growing rapidly.

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# Underreporting of China's Cultivated Land Area: Implications for World Agricultural Trade

by Frederick W. Crook<sup>1</sup>

**Abstract:** Newly published data suggest that the quantity of cultivated land in China may be significantly underreported. Two scenarios use corn to explore the largest possible effects of underreporting on trade forecasts. The first explores the possibility that China's corn output in 1985 was 30 million tons more than estimated, which could explain how the country was able to expand livestock production and stocks, but still boost corn exports in the late 1980's, and why it could continue to export corn for some years to come. The second scenario assumes that corn yields were much lower than estimated and could rise in the 1990's to provide feed grains for China's growing livestock industry and a surplus to continue exporting corn to 2000.

**Keywords:** China, cultivated land, statistics, underreporting, trade.

## Introduction

Farmers underreported farmland in ancient times to avoid the payment of land taxes. The government contributed to underreporting confusion by allowing the area measure "mu" to vary depending on land quality (1,8,9). Surveys conducted in the 1930's first highlighted the scope of the underreporting of cultivated land (10, p. 221). The People's Republic of China, beginning in 1955, carried out a number of rural campaigns, such as collectivization, the formation of communes, the socialist education movement, and the cultural revolution, to get tight control over the rural economy (4,5,7). In the early 1980's, the State Statistical Bureau (SSB) published a wealth of data including data on cultivated land area. This high degree of political and economic control in rural areas was expected to correct previous underreporting.

But in the late 1980's new evidence of underreporting began to appear.<sup>2</sup> A 1992 book entitled "An Economic Analysis of the Progressive Decrease in the Quantity of China's Cultivated Land" detailed various dimensions of the issue.

For 1985, there was an estimated 44 percent more cultivated land than reported by the SSB. Estimated underreporting varied from a low of 14 percent in Hebei Province to a high of 162 percent in Guizhou Province (table A-1). Provinces in poorer mountainous areas tended to underreport more area than provinces in richer and more fertile plains areas. For example, the southwest region underreported by 96 percent, compared with 30 percent for the north region. Underreporting seems to have been most serious in those areas in which crop cultivation dominated rural economic activity.

Only about one-third of the counties have completed detailed land surveys. Land survey teams are examining the remaining administrative units (6,17). The surveys may be completed by 1995, and China, hopefully, will publish revised cultivated land statistics.

## Implications for Corn Trade

China produces, consumes, and trades a wide variety of agricultural products. Many complicated variables need to be considered when assessing the effect China's underreporting may have on this assessment of current and future conditions in world agricultural. This paper examines two scenarios of how the newly released cultivated area information might alter China's data series on corn production, consumption, and trade for 1985. The scenarios provide a range of possible outcomes; the actual situation probably falls somewhere within that range.

Corn ranks third behind rice and wheat among China's top grain crops. Corn is raised in almost all provinces, is a major food and feed grain, and was imported and exported during the 1980's. The first scenario assumes that cultivated and sown area are underreported, that yields are valid, and that output is considerably above reported output by China. The second assumes that area is up but yields are lower and output is unchanged from official reported output.

Table A-2 presents China's SSB estimates of corn area, yield, and production (3 and 4). In the last half of the 1980's, USDA constructed grain supply and use tables using SSB production data and estimated feed production and consumption (2,12). China's livestock numbers and product data were used along with grain-meat and meal-meat conversion ratios to estimate feed use (table A-3).

A key part of the estimate was to choose appropriate grain-meat conversion ratios. Analysts believed farmers in China fed considerable quantities of vegetable matter, table

<sup>1</sup> Agricultural Economist, Agriculture and Trade Division, ERS/USDA.

<sup>2</sup> Source 3, 13, 15, and 16 detail the reasons for underreporting and how underreporting was documented.

Table A-1--China's State Statistical Bureau and cultivated land survey data for 1985 1/

Region/Province	Total land area	Cultivated land area by survey	Cultivated land area according to SSB	Percent of survey over SSB data
		(1)	(2)	(1-2)/2 x 100
1,000 hectares				
Northwest	79043	21229	16516	29
Heilongjiang	45436	11360	8930	27
Liaoning	14683	4507	3586	26
Jilin	18924	5362	3999	34
North	69648	32890	25303	30
Shandong	15781	9137	7038	30
Hebei	18827	7511	6603	14
Beijing	1639	531	421	26
Tianjin	1181	617	447	38
Henan	16566	8955	7033	27
Shanxi	15653	6139	3761	63
Northwest	418681	25069	16464	52
Shaanxi	20581	5594	3627	54
Gansu	40556	5880	3491	68
Nei Monggol	114333	6834	4930	39
Ningxia	5180	1836	795	131
Xinjiang	166312	4063	3083	32
Qinghai	71719	883	538	64
East	35783	14596	11142	31
Zhejiang	10496	2618	1777	47
Jiangsu	10505	5483	4604	19
Shanghai	764	388	340	14
Anhui	14017	6106	4422	38
Central	56473	12186	9295	31
Hubei	18595	4437	3585	24
Hunan	21183	4988	3342	49
Jiangxi	16695	2761	2369	17
South	57174	11482	6859	67
Guangdong	21303	5493	3035	81
Guangxi	23641	4344	2563	69
Fujian	12229	1646	1261	30
Southwest	232955	22216	11241	98
Sichuan	56547	11141	6367	75
Guizhou	17622	4906	1873	162
Yunnan	38361	5788	2777	108
Xizang	120425	381	224	71
National	949758	139689	96820	44

Source: (11, 17) 1/ Survey data minus SSB data divided by SSB data times 100 gives the percent undercount.



Table A-2--China's State Statistical Bureau corn data for 1985

Region/Province	SSB Provincial Corn Sown Area	SSB Provincial Corn Yields	SSB Provincial Production
	1000 ha	mt/ha	1000 ton
Northwest	4455	3.71	16530
Heilongjiang	1577	2.61	4118
Liaoning	1198	3.74	4481
Jilin	1680	4.72	7931
North	6351	3.98	25255
Shandong	2088	4.49	9377
Hebei	1749	3.88	6789
Beijing	217	4.92	1067
Tianjin	136	4.05	551
Henan	1664	3.23	5373
Shanxi	497	4.22	2098
Northwest	2056	3.30	6793
Shaanxi	951	3.07	2916
Gansu	218	3.41	744
Nei Monggol	434	3.68	1597
Ningxia	35	4.06	142
Xinjiang	418	3.33	1394
Qinghai	0		0
East	735	4.14	3045
Zhejiang	45	2.93	132
Jiangsu	460	4.82	2216
Shanghai	6	6.67	40
Anhui	224	2.93	657
Central	483	2.83	1365
Hubei	374	3.08	1153
Hunan	102	1.98	202
Jiangxi	7	1.43	10
South	517	1.91	987
Guangdong	39	1.79	70
Guangxi	476	1.93	917
Fujian	2	0.00	0
Southwest	3097	3.18	9849
Sichuan	1583	3.65	5780
Guizhou	592	2.66	1577
Yunnan	920	2.70	2487
Xizang	2	2.50	5
National	17694	3.61	63826

Source: (11)

scraps, and other materials to save grain and which tend to provide a low grain-to-meat conversion ratio. Analysts also believed that modern feeding methods were not widespread in the mid-1980's so that the grain-meat conversion ratio should be set higher than in Japan where rates for pork in 1985 were around 3.5 kilograms of grain to 1 kilo of pork.

On the other hand, if the analysts picked a ratio of 4.5 to 1, feed grain consumption would greatly exceed estimated availability. Analysts chose a ratio of about 4 to 1 for pork. Grain-to-livestock product ratios were also estimated for beef, mutton, poultry meat, eggs, and milk. Using these conversion rates and published livestock product data, it was estimated that grain fed to livestock in 1985 totaled 99.6 million tons (12). But this left a 15.1-million-ton gap between feed availability from the supply and use table and the estimates stemming from the analysis of the livestock sector.

The effort to reconcile the difference led to questions about whether grain production was being underreported. There were economic reasons underpinning the reporting of less grain. However, with the opening of free markets for livestock products, there were fewer incentives for farmers and meat processors to mis-report these products. Moreover, the fact that China continued to export substantial quantities of corn but import less in the mid-1980's and early 1990's and expand livestock output suggested that corn production was being underreported.

### Scenario 1: Both Area and Production Revised Upward.

Table A-5 summarizes estimates for 1985 which assume that the survey area data and the 1985 SSB yield data are valid. This scenario suggests that corn production in 1985 was 92.3 million tons compared with the reported 63.8, an undercount of 44.6 percent. From SSB data, the multiple cropping index for 1985 was determined by dividing sown area by cultivated area. For 1985, the provincial corn sown area was calculated as a percent of total sown area. The revised sown area was derived by multiplying the revised cultivated area by the SSB 1985 multiple cropping ratio. The revised 1985 corn area was produced by multiplying the provincial corn-to-sown-area ratio times the revised sown area. Revised 1985 provincial corn production was estimated by multiplying the revised corn area estimates times the 1985 SSB corn yield numbers (table A-5).

The 28.5-million-ton difference between the SSB corn production number of 63.8 million tons and the revised estimate of 92.3 million more than offsets the 15.1-million-ton gap between the supply and use balance sheet feed number and the demand for feed discussed earlier, and leaves plenty of corn for stocks and export. A revised corn production estimate would go a long way toward explaining why China has been able to support such a large livestock population and at the same time export corn. The revised corn production number suggests a trade scenario for the 1990's in which China will continue to export corn.

Table A-3--Estimated 1985 feed grain requirements for China

Livestock	Feed Conversion		Production of livestock products	Grain demand
	Grain	Meal		
Pork	3.98	0.184	16.350	65.073
Ruminant	6.02	0.155	1.200	7.224
Poultry	3.860	0.195	1.600	6.176
Eggs	3.840	0.195	5.300	20.357
Milk	0.329	0.101	2.500	0.822
Total grain fed to livestock	NA	NA	NA	99.648

Source: (12).

Table A-4--Two scenarios for China's 1985 corn production

Scenario	Area	Yield	Production	Feed use	Stocks	Net exports
	Mil. Ha	MT/Ha	Mil. MT	Mil. MT	Mil. MT	Mil. MT
USDA	17.694	3.61	63.826	43.188	20.38	6.0
1	25.598	3.61	92.336	UP	UP	6.0
2	25.598	2.49	63.826	43.188	20.38	6.0

Source: USDA area, yield, and production estimates are based on SSB published data. Corn for feed use and stocks has been estimated by ERS.



Table A-5--China's revised corn area and production data for 1985

Region/Province	Revised Provincial Corn Sown Area	SSB Provincial Corn Yields	Revised Provincial Production
	1000 ha	mt/ha	1000 ton
Northwest	5764	3.71	21388
Heilongjiang	2006	2.61	5238
Liaoning	1506	3.74	5631
Jilin	2253	4.72	10634
North	8092	3.98	32179
Shandong	2711	4.49	12174
Hebei	1989	3.88	7723
Beijing	274	4.92	1348
Tianjin	188	4.05	761
Henan	2119	3.23	6841
Shanxi	811	4.22	3424
Northwest	3067	3.30	10134
Shaanxi	1467	3.07	4497
Gansu	367	3.41	1253
Nei Monggol	602	3.68	2214
Ningxia	81	4.06	328
Xinjiang	551	3.33	1837
Qinghai	0		
East	930	4.14	3854
Zhejiang	66	2.93	195
Jiangsu	548	4.82	2639
Shanghai	7	6.67	46
Anhui	309	2.93	907
Central	623	2.83	1762
Hubei	463	3.08	1427
Hunan	152	1.98	302
Jiangxi	8	1.43	12
South	880	1.91	1680
Guangdong	71	1.79	127
Guangxi	807	1.93	1554
Fujian	3	0.00	0
Southwest	6241	3.18	19848
Sichuan	2770	3.65	10113
Guizhou	1550	2.66	4130
Yunnan	1918	2.70	5184
Xizang	3	2.50	9
National	25598	3.61	92336

Source: (11, 17).

Table A-6--China's revised corn area and yield data for 1985

Region/Province	Revised Provincial Corn Sown Area	Revised Provincial Corn Yields	SSB Provincial Production
	1000 ha	mt/ha	1000 ton
Northwest	5764	2.87	16530
Heilongjiang	2006	2.05	4118
Liaoning	1506	2.98	4481
Jilin	2253	3.52	7931
North	8092	3.12	25255
Shandong	2711	3.46	9377
Hebei	1989	3.41	6789
Beijing	274	3.89	1067
Tianjin	188	2.93	551
Henan	2119	2.54	5373
Shanxi	811	2.59	2098
Northwest	3067	2.21	6793
Shaanxi	1467	1.99	2916
Gansu	367	2.03	744
Nei Monggol	602	2.65	1597
Ningxia	81	1.76	142
Xinjiang	551	2.53	1394
Qinghai			0
East	930	3.27	3045
Zhejiang	66	1.99	132
Jiangsu	548	4.05	2216
Shanghai	7	5.84	40
Anhui	309	2.12	657
Central	623	2.19	1365
Hubei	463	2.49	1153
Hunan	152	1.33	202
Jiangxi	8	1.23	10
South	880	1.12	987
Guangdong	71	0.99	70
Guangxi	807	1.14	917
Fujian	3	0.00	0
Southwest	6241	1.58	9849
Sichuan	2770	2.09	5780
Guizhou	1550	1.02	1577
Yunnan	1918	1.30	2487
Xizang	3	1.47	5
National	25598	2.49	63824

Source: (11,17).



## Scenario 2: Area Up, Production Same, Yields Down.

Table A-6 summarizes a scenario in which the survey data for corn area and the SSB production data are correct.

With the corn production number for 1985 still estimated at 63.8 million tons, the gap between the feed estimated in the supply and use balance sheets and the livestock-feed exercise remains at 15.1 million tons. Yields fell to 2.49 tons per hectare from the reported 3.61, a decrease of 31 percent. This leaves considerable potential for yield improvement, especially if farmers use more chemical fertilizer, hybrid seed, and better practices.

If farmers rapidly raise yields in the 1990's, then enough domestic corn may be produced to increase the output of livestock products. China would not need to import large quantities of feed grains and if yields rise enough corn exports could advance substantially.

## Conclusion

The underreporting of cultivated land likely will have an important effect on the way China's agricultural economy is viewed. Import demand for specific agricultural commodities may be less than previously estimated and China may be a more formidable competitor in certain markets.

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## Recent Rural Development in China: Rich Coastal Versus Poor Inland Regions

by Francis C. Tuan<sup>1</sup>

**Abstract:** China's rural development has progressed rapidly since reforms and an open-door policy were introduced in the late 1970's. The total value of rural social output grew markedly and rural per capita income rose significantly. In general, rural development in the coastal provinces, which possesses better infrastructure, have posted faster economic growth than the inland provinces. A comparison and analysis of rural economic achievements between the two regions suggest the gap has become wider after more than a decade of reform. China's Government will need to vigorously promote public, as well as private, investment in infrastructure in central and western China to prevent inland rural development from falling even further behind.

**Keywords:** China, rural development, coastal and inland regions, agricultural production, consumption, rural industry, rural income, rural labor productivity, agricultural trade.

China's rural development goals, like those in many other developing countries, are numerous and diverse. The most important goals include raising the income and standard of living for the people and improving national economic growth. Other goals include alleviating pockets of persistent poverty in some areas of the country and preserving the rural character of other areas. For instance, putting people who live on farms to work in village and township enterprises (or in Chinese, namely, *Litu bu lixiang*).

In general, most rural development studies concentrate on rural versus urban economic growth. This article, in contrast, examines rural economic growth in two different regions in China. The other objective of this study is to see if differences between the regions have implications for China's agricultural trade.

Since rural reforms were implemented in 1979, China has achieved significant rural economic development. The gross value of rural social output (GVRSO), an indicator reflecting overall growth of rural areas, including the combined output of agriculture, industry, construction, commerce, and transportation, grew 9.3 percent annually in real terms between 1978 and 1991. Agricultural production, in terms of gross output value (GVAO), rose at a real rate of 5.6 percent per year in the same period. Rapid GVRSO and GVAO growth, coupled with relative low population growth, means that per capita rural peasant household income also increased substantially.

In general, these economic accomplishments have stemmed from a whole series of rural reforms, including:

- increases in government procurement prices for agricultural crops and livestock products,

- increases in government procurement prices for agricultural products,
- fundamental changes in rural institutions (dismantling the commune system, implementing the rural household production responsibility system, and initiating the land contract system),
- resumption of rural open (or trade) markets, and wholesale and futures markets (mainly spot and forward contract markets),
- expansion of rural industry, and
- enhancement of rural financial and credit services.

However, rural development and growth have varied significantly among China's provinces and the uneven growth has become more pronounced during the last few years. A continuation of this trend could cause social or political unrest, a concern expressed by many governors from inland provinces during the 8th National Peoples' Congress held last April in Beijing.

The principal reason given for uneven economic development—excluding more favorable policies set by the central government, such as the right to establish special economic zones in coastal provinces—is the rapidly increasing foreign and overseas Chinese investment (mainly from Hong Kong and Taiwan) in export-oriented processing industries and rural industries in the coastal region, particularly in China's southern provinces. Other factors include geographic location, such as proximity to harbor facilities and to Hong Kong and Taiwan investors, and infrastructure availability, such as transportation and communication, and finally domestic rural investment in industrial enterprises through rural financial services.

<sup>1</sup> Agricultural Economist, Agriculture and Trade Division, ERS/USDA.



## Features of Coastal and Inland Regions Delineation of Regions

For this study, China is divided into two distinct regions, coastal and inland. The Coastal Region includes 11 provinces or municipalities. The Inland Region consists of two parts, central and western, containing 14 and 5 provinces (or autonomous regions), respectively (figure B-1).

The Coastal Region, with its rich river valleys, is the most populated area and has a disproportionately large share of cultivated land. The western part of the Inland Region, with high plateaus and vast deserts, is China's least populated area. The central part of the Inland Region is a highly concentrated grain and cotton production area, containing more than 60 percent of the country's cultivated area, but, like the western part of the region, feeds a smaller proportion of the total population (table B-1).

## Domestic Investment

Since reform began in 1979, a large portion of China's rural investment has been towards expanding rural industrial enterprises, mainly through loans granted by the Agricultural Bank of China (ABC). The bank, reestablished in 1979, handles rural loans, credit services, and other functions such as financing state grain procurement operations and distributing grain and input subsidies to rural areas.

According to statistics published by the ABC, the bank increased rural enterprise development loans from 2.6 billion yuan in 1980 to 26.1 billion yuan in 1990. The bank favored rural enterprise loans because they generated higher returns compared with agricultural production loans. IOU's were used by local procurement stations to purchase grain in the past few years, which resulted from excessive money lending for rural enterprise development.

The coastal areas, with only 38 percent of China's population and 11 percent of the area, received 50 percent or more of the annual loans for rural village and township industrial development during the 1980's. In general, rural industries in the coastal areas could generate hard currency and higher returns because of easier access to foreign markets. In 1990, the bank's share of lending for rural enterprises was 56.5 percent for the Coastal Region, and 41.1 for the central portion of the Inland Region and 2.4 percent for the western portion.

## Foreign Investment

Foreign investment in China since the early 1980's has been critical to urban and rural economic development. Foreign investment in rural industries, largely in coastal provinces, has provided off-farm job opportunities and contributed to increases in rural household income. It has facilitated rural labor-force transfers out of agricultural production activities. In many cases, rural laborers migrated from inland provinces, such as Sichuan, Hunan, and Shaanxi, to work in Guangdong Province and the municipalities of Beijing and Shanghai. Furthermore, increased investment in processing and construction enterprises in urban areas has indirectly helped expand demand for agricul-

tural raw materials (cotton, meat, and grains) as intermediate inputs.

China's statistics regarding foreign investment clearly indicate that not only did the total amount of foreign investment grow rapidly in the Coastal Region, but the Coastal Region's share of total foreign investment in China rose from 23 percent in 1983, the earliest year for which statistics are available, to 50 percent in 1991 (table B-2).

Along with the rapid growth of foreign investment in the Coastal Region, the Inland Region's foreign investment also increased sharply, with the share rising from 1 percent in 1983 to 7 percent in 1991. Although foreign investment began to extend to remote areas, such as the Xinjiang Autonomous Region, the western part of the Inland Region accounted for only about 1 percent of total foreign investment after more than a decade of economic development.

## Infrastructure Differences

The availability of infrastructure has long been recognized as one of the most important factors in rural development. Because of limited data, this report employed only a few indicators, including length or density (per square kilometer) of railroad track, highway, and navigable inland rivers, and the numbers of telephones and facsimile machines to illustrate differences in infrastructure development between the Coastal and Inland Regions.

As shown in table B-3, although miles of railroad track, highway, and navigable river in coastal provinces and municipalities appear to be less than in the Inland Regions, availability of transportation per square kilometer is much higher in the Coastal Region because of a much smaller total land area. Regarding communication facilities, the growth in the number of telephones and facsimile (fax) machines is far greater in coastal provinces and municipalities than in inland provinces.

## Differentiated Rural Economic Growth

Based on the above description of the characteristics of the Coastal and Inland Regions following more than a decade of economic reforms, differentiated rural development between the two regions appears to be understandable.

China's official statistics show that the Coastal Region, as a whole, experienced a much greater overall development. The region, which accounts for less than 12 percent of the country's land area and 38 percent of its population, generated more than one-half of China's gross national product (GNP) by the end of the 1990's. This study uses official statistics published in various issues of the China Agricultural Yearbook, China Statistical Yearbook, and China Commerce Yearbook to illustrate additional comparison results for the two distinctive regions and to draw implications from the analyses.

Figure B-1  
China's Coastal and Inland Regions





## The Value of Rural Social Output

This report adopts the gross value of rural social output (GVRSO) as a measure of overall rural economic development, because China does not publish provincial rural GNP data. GVRSO is a Marxian concept that measures the value of rural social product and includes the "material production" of agriculture, industry, construction, transportation, and commerce. Nonmaterial products, such as services, are excluded from the calculation.

In 1980, the Coastal Region generated 46.6 percent of the GVRSO of the whole country. This proportion increased to 56.2 percent in 1990. In 1990, the Coastal Region's share was significantly greater than the combined shares of

41.2 percent for the central portion and 2.6 percent for the western portion of the Inland Region (table B-4).

For the Coastal Region, the gross value of agricultural output (GVAO) as a share of the GVRSO, however, declined sharply from 60.1 percent in 1980 to 35.2 percent in 1990, contributing to the fact that the country's agricultural production value -- as a share of the total value of rural social output -- fell below 50 percent by the end of the 1980's. By contrast, the same share for the Inland Region dropped much more slowly, still accounting for more than one-half of the region's total value of rural social output in 1990 (table B-4).

Table B-1 -- China's land mass, cultivated area, and population

Region	Land area (1985)		Cultivated area (1990)		Population (1990)	
	1,000 ha (percent)		1,000 ha (percent)		1,000 ha (percent)	
Coastal:	107,411	(11.3)	28,124	(29.4)	425,818	(37.7)
Inland:						
Central	550,005	(57.7)	59,393	(62.1)	655,830	(58.0)
Western	295,976	(31.0)	8,140	(8.5)	48,835	(4.3)
Total	953,393	(100.0)	95,657	(100.0)	1,130,483	(100.0)

Source: China Statistical Yearbook, various issues; Agricultural Statistics of the PRC, 1949-90, ERS, USDA.

Table B-2 -- China's foreign investment, by region, 1983-91

Region	1983	1984	1985	1986	1987	1988	1989	1990	1991
Million U.S. dollars									
Coastal:	189	2,564	1,363	2,383	1,749	4,814	4,961	4,803	5,831
Inland:									
Central	35	173	178	308	393	756	877	656	827
Western	--	3	--	18	20	40	11	27	82
Others: 1/	3,206	2,051	2,921	4,549	6,290	4,616	4,210	4,803	4,814
Total	3,430	4,791	4,462	7,258	8,452	10,226	10,059	10,289	11,554
Percent									
Coastal:	23	54	31	33	21	47	49	47	50
Inland:									
Central	1	4	4	4	5	7	9	6	7
Western	--	1	--	--	--	--	--	--	1
Others: 1/	76	49	65	63	74	40	42	47	42
Total	100	100	100	100	100	100	100	100	100

1/ Include investment at Ministry levels.

Source: China Statistical Yearbook, various issues.

Table B-3 -- China's transportation and communication infrastructure, by region

Region	Railroads		Highways		Navigable rivers	
	1985	1991	1985	1991	1985	1991
Kilometers/1,000 square kilometers						
Coastal:	12.38	12.91	251.67	287.90	50.82	50.21
Inland:						
Central	6.13	6.27	104.07	113.57	9.89	10.03
Western	1.72	1.72	33.70	36.26	0.04	0.21
Country Total	5.47	5.60	98.85	109.20	11.44	11.51

Region	Telephone		Fax machines	
	Total	Rural	Total	Rural
Number				
Coastal:	3,290,794	791,819	9,026,023	1,842,821
Inland:				
Central	2,691,552	663,707	5,411,771	932,740
Western	43,196	277,483	57,444	551,993
Country Total	6,259,829	1,498,722	14,989,787	2,833,005

Source: China Statistical Yearbook, various issues.

The share of the gross value of rural industry output (GVRIO) to the GVRSO for the Coastal Region increased sharply, from 27.4 percent in 1980 to 52.3 percent in 1990. For the Inland Region, rural industry's output shares in both the central and western parts increased, but remained far below 50 percent of GVRSO (table B-4).

Rural village and township enterprise development has absorbed more than 90 million rural people who have shifted from agricultural production activities. Many still live in rural areas, but others have temporarily migrated to other provinces.

## Rural Labor Productivity

Per capita rural labor productivity, in terms of both output value and grain production, has become more differentiated between the Coastal and Inland Regions during the 10 years of reform. For this report, per capita labor GVRSO is used to illustrate overall rural labor productivity. As shown in table B-5, per capita rural labor GVRSO for the Coastal Region rose 300 percent from 1983 to 1990, compared with 170 and 190 percent for the central and western Inland Region in the same period.

Similarly, widened gaps are also observed with the changes in per-agricultural-labor GVAO as well as per-agricultural-labor grain output for the two regions (table B-5). All of the above differentiated growth implies that the gap

of rural labor productivity in Coastal and Inland Regions has widened.

## Marketable Grains

China has a very unique grain procurement system. The grains procured by the government are used mainly for urban resident rations, military personnel, industrial processing, and strategic stock purposes. In general, annual balances of total procurement and sales of grains, largely rice, wheat, and corn, can be used to roughly illustrate the relative levels of grain self-sufficiency for the two regions.

In 1990 and 1991, for example, the coastal provinces as a whole posted a shortage of 1.24 and 4.23 million tons of grain (net domestic purchases minus net domestic sales), with only the provinces of Liaoning and Hebei managing to sustain grain self-sufficiency in both years. Individual provinces and municipalities, such as Guangdong, Beijing, and Shanghai, had a net grain shortage of 1.5 to 2.5 million tons annually (table B-6).

The shortage of food and feed grains in coastal provinces, particularly Guangdong Province, has become serious as more farmers switch from grain production to fish farming and fruit and vegetable production. Cultivated area declined in recent years because of increased construction and industrialization. Reportedly, Guangdong Province needs to import 5 million tons of grain from other provinces or foreign countries in 1993 (1).



Table B-4 -- China's gross value of rural social output (GVRSO), value of agricultural output (GVAO), and value of rural industrial output (GVRIO), by region.

Region	GVRSO		GVAO/GVRSO		GVRIO/GVRSO	
	1980	1990	1980	1990	1980	1990
	Percent					
Coastal:	46.6	56.2	60.1	35.2	27.4	52.3
Inland:						
Central	50.1	41.2	76.0	57.6	12.9	26.1
Western	3.3	2.6	84.4	74.6	7.4	11.6
Country Total	100.00	100.00	68.9	45.1	19.5	40.4

Source: China Statistical Yearbook, various issues.

Table B-5 -- Per capita rural labor (pcrl) GVRSO, per capita agricultural labor (pcal) GVAO, and per capita agricultural labor (pcal) grain output

Region	Pcrl GVRSO		Pcal GVAO		Pcal grain output	
	1983	1990	1983	1990	1983	1990
	yuan		yuan		Kilograms	
Coastal:	1,475	5,917	984	3,093	1,232	1,453
Inland:						
Central	997	2,697	796	1,890	1,226	1,281
Western	912	2,636	939	2,450	1,109	1,339
Country Average	1,166	3,883	869	2,298	1,224	1,339

Source: China Statistical Yearbook, various issues.

Table B-6 -- China's net grain procurement and net grain sales, 1990 and 1991

Region	Net grain procurement		Net grain sales		Balance	
	1990	1991	1990	1991	1990	1991
	1,000 Tons					
Coastal:	40,070	41,895	41,307	46,125	-1,237	-4,230
Inland:						
Central	77,594	70,143	47,382	52,477	30,211	17,666
Western	4,900	4,238	3,901	3,864	998	372
Country Total	122,564	116,275	92,291	102,467	30,273	13,808

Source: China Commerce Yearbook, 1991 and 1992

As China's grain production stagnated in the late 1980's, Guangdong Province tried to import grains from Hunan and other neighboring provinces. However, physical barriers were set up by exporting provinces because they generally lost money in the transfer of grain because of the government's low, fixed domestic transfer prices.

Interregional or interprovincial trade was very tense at the time. The situation has reportedly improved in the last 2 or 3 years, since China's Central Government began to allow some coastal provinces to relax grain prices and use wholesale markets to transfer grain from surplus to deficit areas.

For the Inland Region as a whole, the annual balance of total grain procurement and sales showed surpluses of 31.12 and 18.0 million tons of grain for 1990 and 1991, with only five provinces, Yunnan, Guizhou, Guangxi, Qinghai, and Xizang, below the grain self-sufficiency level in the same time period (table B-6). Heilongjiang, Jilin, Henan, Hubei, and Jiangxi Provinces in the Inland Region reported net grain surpluses of 2 to 10 million tons (mostly corn). The overall grain surplus indicates that although inland provinces produce grain less efficiently, they nevertheless provide more commodity grains for markets in China.

## Peasant Income and Food Consumption

Because of faster growth in per capita labor productivity and the rapid development of rural enterprises, per capita peasant household incomes in most coastal provinces are higher than the national average (with the exception of Hebei, Shandong, and Hainan). Per capita peasant household incomes in coastal provinces have grown faster than the inland region, where only about one-half of the provinces achieved a slightly higher growth rate than the national average (table B-7). This observation is consistent with a recent study conducted by China's Ministry of Agriculture (MINAG). The MINAG study divides China into three regions, eastern, central, and western. The regional delineation is similar to this study's Coastal Region and central and western parts of the Inland Region (with the exception of Nei Monggol, Yunnan, and Guizhou, which are included in the western region in the MINAG study instead of in the central part of the Inland Region as in this study). The MINAG study revealed that 1985 per capita income of the rural population was 497 yuan in the eastern region and 343 and 355 yuan, respectively, in the central and western regions. In 1990, the averages rose to 812, 538, and 497 yuan. The per capita income growth shows that the gap between the eastern region and the central and western regions increased 80 percent to 120 percent (6).

Notably, after more than a decade of reform, per capita peasant household incomes in some provinces of the Inland Region are even less than they were 10 years earlier. For example, per capita peasant household income in Hunan Province was about the same as that of Jiangsu Province in 1980, but by 1990 lagged behind more than 30 percent (table B-7). Another example is Guizhou Province, one of China's poverty areas, where per capita peasant household income was 16 percent lower than the national

average in 1980, but deteriorated to 34 percent lower by 1990.

Changes in per capita peasant grain and meat consumption do not follow the above trend. Nevertheless, there has been a very significant change. While per capita peasant grain consumption for the Coastal and Inland Regions does not show any obvious pattern of changes, the composition of fine grains (rice or wheat) in per capita grain consumption shows sharp increases in China's northern provinces in both the Coastal and Inland Regions. As shown in table B-7, the northern provinces include Liaoning, Hebei, Shandong, Shanxi, Shaanxi, and Henan. The major reason for the increases in the proportion of fine grain consumption stems from the significant rise in wheat yields in the North China Plains during the 1980's.

Similarly, changes in per capita peasant redmeat consumption do not show any obvious trends or differentiated growth between the Coastal and Inland Regions. While per capita peasant redmeat consumption appears higher in suburban areas of larger cities and in the southern provinces in the Coastal Region, some remote and poor provinces located in southwestern China, such as Yunnan, Guizhou, Sichuan, and Xizang, also reported figures that were higher than the national average for meat consumption. Nei Monggol and Qinghai in northwestern China also show higher per capita peasant redmeat consumption rates. This seems to indicate that, in addition to income levels, many other factors, including the transportation system, religion, and type of farming region (cropping or grazing), also affect the amount of red meat consumption in China. Animal meat availability per person is largely determined by local production because of China's poor storage and transportation system. The grazing region, such as Xizang, Nei Monggol, and Qinghai where the majority of the Muslim population is located, produces and consumes more beef and mutton. Sichuan Province, in the cropping region, produces a large quantity of pork and thus pork consumption is higher than in other provinces.

## Expansion of Foreign Trade

It was not surprising to find that foreign trade has been much greater, in both volume and value, in the coastal provinces. Since the implementation of the open-door policy in the late 1970's, China has encouraged all provinces to trade with foreign countries in order to earn hard currency. Table B-8 shows that coastal provinces, (not rural areas of coastal provinces) contributed more than 70 percent of China's total exports from 1984 (the earliest year for which export statistics are available) through 1990. Notably, Guangdong Province alone in 1990 exported more in terms of value than the entire Inland Region. The Inland Region as a whole only contributed 14 to 20 percent of the country's total exports between 1984 and 1990. In the last few years, the central government has encouraged border trade with neighboring countries and achieved great success, particularly with the new republics of the former USSR. The open policy encouraging border trade with neighboring countries will be important in developing rural industries in the provinces in the Inland Region.



Table B-7 -- Per capita net income, grain, and red meat consumption

Region/ province	Per capita peasant income			Per capita grain consumption			Per Capita red meat consumption		
	1980	1990	Growth rate	1980	1990	Growth rate	1980	1990	Growth rate
	yuan	yuan	Percent	Kg(FG%) 1/	Kg(FG%)	Percent	Kg	Kg	Percent
<b>Coastal:</b>									
Liaoning	273	836	10.7	260 (19)	272 (48)	-0.6	9.7	11.7	1.7
Hebei	176	622	12.2	226 (30)	231 (70)	0.1	4.5	6.4	3.3
Beijing	290	1,297	14.6	250 (54)	213 (87)	-1.4	7.6	11.5	3.8
Tianjin	278	1,069	13.0	238 (63)	238 (89)	0	6.5	8.8	2.8
Shandong	194	680	12.1	229 (35)	226 (80)	-0.1	5.1	6.8	2.7
Shanghai	397	1,907	15.3	297 (80)	236 (91)	-2.1	12.6	16.8	2.7
Jiangsu	218	959	14.4	295 (82)	276 (89)	-0.6	6.9	9.5	3.0
Zhejiang	219	1,099	15.8	312 (87)	271 (90)	-1.3	7.6	12.8	4.9
Fujian	172	764	14.5	291 (91)	269 (80)	-0.7	6.3	12.4	6.4
Guangdong	274	1,043	12.9	292 (91)	260 (96)	-1.0	6.5	15.4	10.8
Hainan	NA	696	-	NA	243 (85)	-	NA	10.3	-
<b>Inland:</b>									
<b>Central</b>									
Heilongjiang	205	760	12.7	254 (23)	271 (66)	0.6	7.4	6.4	-1.3
Jilin	236	804	11.8	299 (22)	287 (49)	-0.4	8.9	10.7	1.7
Nei Monggol	181	607	11.6	253 (30)	288 (39)	1.2	10.4	16.5	4.3
Henan	161	527	11.4	222 (56)	254 (89)	1.2	4.1	5.2	2.2
Shanxi	156	604	13.1	242 (20)	224 (52)	-0.7	3.1	4.5	3.5
Shaanxi	142	531	12.7	206 (44)	246 (70)	1.6	5.4	6.2	1.3
Hunan	220	664	10.6	334 (91)	314 (100)	-0.6	11.2	15.6	3.1
Hubei	170	670	13.3	270 (84)	302 (93)	1.0	8.9	15.9	5.4
Anhui	185	539	10.2	279 (82)	293 (95)	0.5	3.2	7.9	8.6
Jingxi	181	670	12.6	306 (97)	341 (97)	1.0	6.5	12.0	5.8
Sichuan	188	558	10.4	259 (71)	260 (89)	0	13.3	19.5	3.5
Yunnan	150	541	12.4	222 (59)	232 (78)	0.4	8.1	16.4	6.6
Guizhou	161	435	9.5	225 (66)	231 (78)	0.2	10.0	15.7	4.2
Guangxi	174	639	12.6	257 (91)	242 (93)	-0.5	6.4	10.8	4.9
<b>Western</b>									
Xinjiang	198	683	11.9	212 (60)	246 (89)	1.4	9.4	9.0	-0.4
Qinghai	NA	560	-	NA	246 (70)	-	8.6	15.8	6.3
Ningxia	NA	578	-	226 (80)	256 (87)	1.1	3.6	9.0	8.7
Gansu	153	431	9.9	238 (50)	244 (80)	0.2	8.8	8.3	-0.5
Xizang	NA	650	-	NA	198 (38)	-	-	15.8	-
National average	191	686	12.3	257 (63)	262 (82)	0.2	7.6	11.3	3.7

1/ Numbers in parentheses indicate percentage of fine grains.

Source: China Statistical Yearbook, various issues.

Table B-8 -- Provincial exports, by region, 1984-90

Region/ province	1984	1985	1986	1987	1988	1989	1990
Million U.S. \$							
Coastal:	18,750	19,963	19,266	24,651	28,861	31,376	38,286
Liaoning	5,061	5,013	2,953	3,745	3,798	4,373	5,588
Hebei	783	1,287	1,038	1,468	1,534	1,596	1,678
Beijing	627	604	708	865	999	1,133	1,344
Tianjin	1,195	1,105	1,230	1,488	1,703	1,685	1,909
Shandong	2,267	2,660	2,125	2,952	2,982	3,046	3,419
Shanghai	3,724	3,302	3,536	4,172	4,576	5,017	5,524
Jiangsu	1,485	1,515	1,691	2,051	2,277	2,383	2,873
Zhejiang	735	935	1,122	1,323	1,560	1,767	2,211
Fujian	423	483	581	849	1,362	1,641	2,224
Guangdong	2,450	3,059	4,282	5,738	7,784	8,939	11,015
Hainan	NA	NA	NA	NA	286	342	501
Inland:							
Central	3,304	4,043	5,284	6,875	7,986	8,547	9,524
Heilongjiang	343	416	609	794	937	1,018	1,114
Jilin	245	421	523	464	514	669	732
Nei Monggol	79	134	169	223	310	333	323
Henan	339	365	455	648	757	808	831
Shanxi	166	227	301	344	345	399	455
Shaanxi	96	103	170	260	311	381	462
Hunan	418	398	505	619	638	661	790
Hubei	448	513	719	948	1,175	1,011	1,044
Anhui	242	304	364	513	538	552	637
Jingxi	242	259	308	405	489	517	562
Sichuan	211	344	476	712	850	944	1,127
Yunnan	115	149	198	311	467	537	563
Guizhou	37	40	57	92	113	132	153
Guangxi	323	370	430	542	542	585	731
Western	243	298	381	439	577	624	647
Xinjiang	158	180	199	216	294	345	312
Qinghai	14	19	25	35	43	57	68
Ningxia	22	31	45	55	79	59	75
Gansu	46	66	106	126	151	150	182
Xizang	3	2	6	7	10	13	10
National total 1/	24,416	25,916	27,014	34,711	40,640	43,440	52,067

1/ Provincial exports do not add to national total because of other sources of exports, such as those from Ministry level.

NA = Not applicable

Source: Foreign Trade Statistical Yearbook, 1985-91.



## Implications

Although the rural reform and development strategies adopted by China's Government since the end of the 1970's have been very effective for the country as a whole, faster rural development in the Coastal Region has widened the distance between the Inland Region and the Coastal Region in terms of overall rural social output and per capita peasant household income. Economic development in the Coastal Region has been achieved mainly because of a combination of natural or location advantages, such as easier access to foreign investors, better harbor facilities for exports, and preferential government policies, such as developing infrastructure, larger domestic investment, and government provisions to establish special economic zones. Comparisons of changes in the economic structure and the economic indicators of the two regions indicate the following are necessary to prevent the continuation of unbalanced development:

1. China's Government urgently needs to formulate new development policies or strategies to lure more domestic and foreign investment toward rural development in inland provinces, particularly poverty areas. China's Central Government will need provincial government cooperation and support in the planning and implementation of new strategies or the economic imbalance may eventually undermine political and social stability.
2. To encourage domestic and foreign investment in inland provinces, China's governments, both central and provincial, will urgently need investment in infrastructure. This includes transportation, communication networks, and rural financial services. The central and local governments also need to establish preferential investment regulations in order to provide a favorable development environment. To begin Inland Region development, for example, some rural areas around cities and townships could be initially

selected for immediate development, with a plan to gradually develop a network for the entire region.

3. Finally, to achieve sustained rural economic growth and industrialization, China's central and provincial governments in the Coastal Region should further liberalize the pricing and foreign trade systems, including agricultural imports (particularly food and feed grains) to meet high income-induced demand. The liberalization of prices and the foreign trade system will increase China's overall economic welfare and reduce trade conflicts between the provinces in the Coastal and the Inland Regions. Eventually, inland provinces will need to follow the same policies of liberalizing prices and the trading system to allow optimal returns to resources.

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### Conversion Equivalents and Definitions

China	Metric	English	
1 mu	0.0667 ha		0.1647 acre
15 mu	1.0 ha		2.4711 acres
1 jin (catty)	0.5 kg =	0005 ton	1.1023 lbs
1 dan (100 jin)	50.0 kg =	.05 ton 110.23 lbs	
1 dun (ton)	1,000.0 kg =	1.00 ton	2,204.6 lbs
1 jin/mu	7.5 kg/ha	6.93 lbs./acre	
Crops:	lbs./bu.	1.0 bu.	1.0 ton
Wheat, potatoes, soybeans	60	0.02722 ton	36.743 bushels
Rye, corn, and sorghum	56	0.02540 ton	39.368 bushels
Barley	48	0.02177 ton	45.929 bushels
Oats	32	0.01452 ton	68.894 bushels
Cotton (480-lbs bale)	NA	NA	4.593 bales
Cotton (500-lbs running bale)	NA	NA	1.409 bales
1 kilometer equals 0.6213 mile.			
1 mile equals 1.6093 kilometers.			

#### Exchange rate:

In 1992 U.S. \$1.00 averaged 5.515 yuan.



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Appendix table 1--China's grain area, yield, and production, 1987-91<sup>1</sup>

Unit	1986	1987	1988	1989	1990	1991	1992
Million hectares							
Sown area							
Wheat	29.62	28.80	28.79	29.84	30.75	30.95	30.50
Rice	32.27	32.14	31.99	32.19	33.06	32.60	32.09
Coarse grains	25.84	26.63	25.82	26.17	27.01	26.98	26.38
Corn	19.12	20.21	19.69	20.35	21.40	21.57	21.04
Sorghum	1.88	1.86	1.79	1.63	1.55	1.40	1.40
Millet	2.98	2.69	2.51	2.40	2.28	2.23	2.15
Barley	1.29	1.29	1.25	1.22	1.21	1.20	1.25
Oats	0.57	0.59	0.58	0.58	0.58	0.58	0.54
Potatoes	8.69	8.86	9.05	9.10	9.12	9.08	9.06
Others <sup>2</sup>	14.51	14.78	14.47	14.39	13.52	12.71	12.53
Total <sup>3</sup>	110.93	111.22	110.12	112.21	113.50	112.31	110.56
Tons/hectare							
Yield <sup>4</sup>							
Wheat	3.04	2.98	2.97	3.04	3.19	3.10	3.33
Rice	5.34	5.41	5.29	5.51	5.73	5.64	5.80
Coarse grains	3.28	3.51	3.56	3.49	4.13	4.14	4.14
Corn	3.71	3.92	3.93	3.88	4.52	4.58	4.53
Sorghum	2.87	2.91	3.14	2.72	3.67	3.50	3.64
Millet	1.52	1.69	1.76	1.57	2.01	1.79	1.95
Barley	2.08	2.89	3.19	2.93	3.25	2.88	3.20
Oats	1.04	1.10	1.19	1.08	1.17	1.12	1.19
Potatoes	3.10	3.15	3.01	3.00	3.01	2.95	3.00
Others <sup>2</sup>	1.31	1.39	1.40	1.25	1.45	1.34	1.36
Total <sup>3</sup>	3.52	3.62	3.58	3.63	3.93	3.88	4.00
Million tons							
Production							
Wheat	90.04	85.84	85.43	90.81	98.23	95.95	101.59
Rice	172.22	173.88	169.11	180.13	189.33	183.81	186.22
Coarse grains	84.83	93.57	94.21	93.47	111.68	111.78	109.32
Corn	70.86	79.24	77.35	78.93	96.82	98.77	95.38
Sorghum	5.38	5.43	5.59	4.44	5.68	4.90	5.10
Millet	4.54	4.54	4.41	3.75	4.58	4.00	4.20
Barley	3.45	3.72	6.18	5.69	3.93	3.46	4.00
Oats	0.60	0.65	0.67	0.66	0.68	0.65	0.64
Potatoes <sup>5</sup>	25.34	28.13	27.23	27.30	27.43	27.16	28.44
Others <sup>2</sup>	19.08	20.53	20.27	18.00	19.57	17.10	17.09
Total <sup>3</sup>	391.51	402.04	394.41	407.55	446.24	435.29	442.66

<sup>1</sup> Data are official figures released by the SSB or the Ministry of Agriculture, except for: (1) 1992 total and individual coarse grain production; and (2) 1992 barley and oats, and other grain area and production.

<sup>2</sup> Consists of soybeans, pulses, and other miscellaneous grains. All of these items are included in China's definition of total grains.

<sup>3</sup> PRC definition.

<sup>4</sup> Calculated from area and production figures.

<sup>5</sup> Converted to a grain-equivalent weight using a 5:1 conversion ratio.

Sources: China Agriculture Yearbooks, 1987-92; China Statistical Yearbooks, 1987-92; and China Statistics Abstract, 1993.



Appendix table 2--China's 1992 provincial grain, cotton, oilseed crop, sugar crop, and red meat production

Province	Grain	Cotton	Oilseed crop	Sugar crop	Red meat
1,000 tons					
Northeast:					
Heilongjiang	23,663	0	219	5,398	627
Liaoning	15,684	28	176	523	997
Jilin	18,403	0	358	918	501
North:					
Shandong	35,893	677	1,663	65	2,312
Hebei	21,856	306	663	133	1,444
Beijing	2,819	55	34	0	274
Tianjin	1,987	16	40	0	112
Henan	31,096	659	1,336	93	1,529
Shanxi	8,583	95	337	608	351
Northwest:					
Shaanxi	10,316	55	356	75	555
Gansu	6,749	18	365	942	445
Nei Monggol	10,468	33	814	2,601	608
Ningxia	1,869	0	62	454	69
Xinjiang	6,943	668	356	3,291	323
Qinghai	1,185	0	140	22	161
East:					
Zhejiang	15,535	60	501	750	971
Jiangsu	32,978	527	1,273	248	1,724
Shanghai	2,272	15	219	30	231
Anhui	23,251	263	1,400	126	1,062
Central:					
Hubei	24,266	610	997	516	1,622
Hunan	26,201	203	839	1,713	2,140
Jiangxi	15,660	148	742	2,561	1,284
South:					
Guangdong	17,743	0	614	23,766	1,720
Guangxi	14,189	11	293	23,549	1,150
Fujian	8,971	0	199	3,616	753
Hainan	1,933	0	57	4,531	157
Southwest:					
Sichuan	42,896	151	1,617	2,279	4,491
Guizhou	7,889	11	534	216	817
Yunnan	10,704	1	188	9,072	872
Xizang	655	0	18	0	97
Total	442658	4,508	16,412	88,080	29,406

Source: 1993 China Statistics Abstract.

Appendix table 3--China's oilseeds and cotton area, yield, and production, 1987-92

Item	1986	1987	1988	1989	1990	1991	1992 <sup>1</sup>
<b>Sown area:</b> 1,000 hectares							
Cotton	4,306	4,844	5,535	5,203	5,588	6,538	6,835
Oilseeds, USDA <sup>2</sup>	21,877	22,431	21,434	21,929	22,271	23,384	23,733
Soybeans	8,295	8,411	8,120	8,057	7,560	7,050	7,221
Oilseeds, PRC <sup>3</sup>	11,415	11,181	10,619	10,512	10,900	11,530	11,473
Peanuts	3,253	3,022	2,914	2,946	2,907	2,880	2,976
Rapeseed	4,916	5,267	4,936	4,993	5,503	6,133	5,976
Sesameseed	1,007	869	704	722	669	680	746
Sunflowerseed	1,107	887	830	716	713	750	725
Other oilseeds <sup>4</sup>	1,132	1,136	1,135	1,140	1,108	1,087	1,050
<b>Yield:</b> Kg/hectare							
Cotton	824	877	750	731	807	869	659
Oilseeds, USDA <sup>2</sup>	1,301	1,370	1,235	1,200	1,497	1,465	1,377
Cottonseed	1,398	1,490	1,274	1,240	1,371	1,475	1,121
Soybeans	1,400	1,482	1,434	1,270	1,455	1,377	1,426
Oilseeds, PRC <sup>3</sup>	1,291	1,366	1,243	1,220	1,480	1,421	1,415
Peanuts	1,808	2,042	1,954	1,793	2,191	2,189	2,000
Rapeseed	1,196	1,254	1,021	1,090	1,264	1,212	1,280
Sesameseed	614	605	574	592	701	640	688
Sunflowerseed	1,395	1,399	1,420	1,486	1,879	1,467	1,628
Other oilseeds <sup>4</sup>	718	647	781	605	901	1,020	952
<b>Production:</b> 1,000 tons							
Cotton <sup>5</sup>	3,549	4,246	4,149	3,788	4,508	5,675	4,508
Cotton (1,000 bales) <sup>5</sup>	16,300	19,500	19,100	18,000	20,705	26,065	20,705
Oilseeds, USDA <sup>2</sup>	30,939	33,698	30,615	28,450	33,329	34,519	32,750
Cottonseed	6,018	7,217	7,053	6,440	7,664	9,660	7,664
Soybeans	11,614	12,465	11,645	10,230	11,000	9,710	10,300
Oilseeds, PRC <sup>3</sup>	14,738	15,278	13,203	12,820	16,132	16,383	16,299
Peanuts	5,882	6,170	5,693	5,360	6,368	6,303	5,953
Rapeseed	5,881	6,605	5,040	5,440	6,958	7,436	7,653
Sesameseed	618	526	404	340	469	435	516
Sunflowerseeds	1,544	1,241	1,180	1,064	1,339	1,100	1,180
Other oilseeds <sup>4</sup>	813	735	886	690	998	1,109	1,000
Edible veg oil <sup>6</sup>	4,444	4,636	4,319	4,288	5,229	5,467	5,519
Available meal <sup>6</sup>	10,307	12,113	10,835	10,345	12,583	13,007	13,235

<sup>1</sup> Figures for sunflowerseed and other oilseeds are USDA estimates.

<sup>2</sup> Oilseed data published by USDA include only soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed; area includes cotton.

<sup>3</sup> China's total oilseed data exclude soybeans and cottonseed.

<sup>4</sup> "Other oilseeds" are calculated as a residual and include mainly huma (an edible oil-bearing flaxseed) and castor beans; oil-bearing tree seeds are excluded.

<sup>5</sup> Cotton production is on a ginned-weight basis. Bales are 480 pounds.

<sup>6</sup> Available oil and meal are estimated by USDA for the marketing year following harvest by applying assumed crush and extraction rates to production plus net imports. Edible vegetable oil excludes linseed oil. oilseeds crushed include soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed.

Sources: China Statistical Yearbook, 1987-92; China Agriculture Yearbook, 1987-92; and China Statistics Abstract, 1993.



Appendix table 4--China's yearend livestock inventory and product output, 1986-92

Item	1986	1987	1988	1989	1990	1991	1992
Million head							
Yearend inventory:							
Hogs	337.19	327.73	342.22	352.81	362.41	369.65	384.21
Large animals	118.96	121.91	125.38	128.05	130.21	131.93	134.65
Draft animals	69.05	71.13	72.19	74.32	76.06	76.82	77.60
Cattle	91.67	94.65	97.95	100.75	102.88	104.59	107.64
Dairy cows	1.85	2.16	2.22	2.53	2.69	2.95	na
Water buffalo	20.41	21.50	21.65	21.40	21.69	22.01	na
Horses	10.99	10.69	10.54	10.29	10.17	10.09	10.02
Mules	10.69	10.84	11.05	11.14	5.49	5.61	5.61
Donkeys	5.11	5.25	5.37	5.39	11.20	11.16	10.98
Camels	0.50	0.48	0.47	0.47	0.46	0.44	0.40
Sheep	99.01	102.65	110.57	113.51	112.82	110.86	109.72
Goats	67.22	77.69	90.96	98.13	97.21	95.36	97.61
Poultry <sup>1</sup>	1,965.60	2,039.82	2,261.22	2,268.43	na	na	na
Million head							
Number slaughtered:							
Hogs	257.22	261.77	275.70	290.23	309.91	328.97	351.70
Cattle	5.55	6.33	8.58	9.43	10.88	13.04	na
Sheep & goats	52.27	56.52	68.27	81.22	89.31	98.16	na
Poultry	1,578.82	1,791.72	2,145.72	2,180.53	na	2,823.58	na
Percent							
Slaughter rate: <sup>2</sup>							
Hogs	77.6	77.6	84.1	84.8	87.8	90.8	95.0
Cattle	6.4	6.9	9.1	9.6	10.8	12.7	na
Sheep & goats	33.5	34.0	37.9	40.3	42.2	46.7	na
Poultry <sup>1,3</sup>	79.8	91.2	105.2	96.4	105.4	113.4	na
1,000 tons							
Production:							
Meat	19,171	19,860	21,936	23,262	25,135	27,238	29,406
Pork	17,960	18,349	20,176	21,228	22,811	24,523	26,353
Beef	589	792	958	1,072	1,256	1,535	1,803
Mutton	622	719	802	962	1,068	1,180	1,250
Poultry meat	1,879	2,020	2,744	2,820	3,229	3,950	na
Cow's milk	2,899	3,301	3,660	3,813	4,157	4,644	5,639
Sheep & goat's milk	430	487	529	570	594	599	na
Sheep's wool	185	209	222	237	239	240	na
Mohair	12	13	14	16	17	17	na
Cashmere	4	4	5	5	6	6	na
Eggs	5,550	5,902	6,955	7,198	7,946	9,220	10,199

na = not available

<sup>1</sup>Poultry includes chickens, ducks, and geese.

<sup>2</sup>Slaughter rate is slaughter divided by beginning inventory.

<sup>3</sup>Data for 1990 and 1991 are estimates.

Sources: China Statistical Yearbook, 1987-92; China Agricultural Yearbook, 1987-92; and China Statistics Abstract, 1993.

Appendix table 5--China's major agricultural exports, by volume, 1987-92

Item	Units	1987	1988	1989	1990	1991	1992
Swine, live	1,000 head	3,020	3,027	2,980	3,000	2,850	2,900
Poultry, live	1,000 head	41,150	44,180	44,840	47,840	47,520	51,770
Beef, fresh or frozen	Tons	33,587	53,986	56,493	96,593	132,040	30,000
Pork, fresh or frozen	Tons	99,964	63,484	88,423	124,236	116,635	50,000
Broiler, frozen	Tons	16,769	25,660	31,465	37,813	45,395	11,630
Rabbit meat, frozen	Tons	20,545	20,976	21,438	20,545	11,742	17,330
Eggs	Million	1,109	924	753	601	605	635
Food grain	1,000 tons	7,080	7,180	6,570	5,830	10,860	12,020
Rice	1,000 tons	1,020	700	320	330	690	950
Corn (maize)	1,000 tons	3,920	3,920	3,500	3,400	7,780	10,310
Soybeans	1,000 tons	1,710	1,480	1,260	940	1,110	660
Fruit	Tons	243,792	280,853	272,557	226,387	163,563	na
Oranges	Tons	76,160	74,705	70,514	65,624	43,414	61,392
Apples	Tons	60,345	87,859	70,331	62,425	24,082	38,317
Walnuts, in shell	Tons	9,777	8,370	8,684	5,247	4,992	na
Walnut meat	Tons	11,294	10,608	12,845	8,712	8,245	9,841
Chestnuts	Tons	35,966	35,292	33,296	36,022	33,939	29,138
Sugar	Tons	452,493	247,802	429,623	570,493	343,315	1,670,019
Natural honey	Tons	66,831	46,487	71,498	88,005	69,958	91,745
Tea	Tons	174,273	198,290	204,583	195,471	184,872	175,525
Canned food	Tons	536,958	554,176	548,355	565,748	657,660	na
Pork	Tons	93,757	81,528	86,341	90,906	128,409	53,075
Vegetables	Tons	329,843	333,224	332,143	332,708	340,265	na
Fruit	Tons	87,351	87,967	71,399	77,825	99,102	na
Beer	Tons	32,429	39,343	41,753	35,223	43,634	57,140
Flue-cured tobacco	Tons	17,019	19,367	21,931	27,511	60,937	47,850
Goatskin	1,000 pieces	721	1,145	7,890	9,140	2,410	310
Furskin, raw	1,000 pieces	844	435	3,800	4,660	1,620	980
Mink skin	1,000 pieces	270	174	2,660	2,720	850	620
Raw silk	Tons	9,234	9,404	12,819	7,604	7,919	8,899
Cotton	Tons	754,577	468,002	272,482	167,282	199,980	144,620
Cashmere	Tons	2,560	2,712	2,039	1,413	2,020	na
Rabbit hair	Tons	4,908	9,735	6,442	4,703	6,419	5,686
Oilseeds, edible	Tons	528,938	510,215	392,080	515,523	572,231	630,000
Peanuts and shelled peanuts	Tons	267,987	251,218	266,066	387,322	427,640	300,000
Vegetable oil	Tons	55,660	25,503	62,099	139,477	99,334	67,846
Cotton yarn	Tons	242,964	205,717	183,656	176,156	187,035	162,945

na = not available

Source: China's Customs Statistics, 1987-92



Appendix table 6--China's major agricultural exports, by value, 1987-92

Item	1987	1988	1989	1990	1991	1992
U.S. \$1,000						
Swine, live	201,960	232,910	242,410	270,090	276,350	289,560
Poultry, live	71,750	76,540	76,940	84,530	82,040	93,340
Beef, fresh or frozen	55,320	107,980	105,940	158,740	203,850	38,850
Pork, fresh or frozen	172,080	115,820	159,300	215,480	185,660	76,420
Broilers, frozen	25,230	43,480	55,320	74,390	95,840	22,500
Rabbit meat, frozen	40,910	37,390	34,610	30,080	26,110	46,890
Eggs	42,850	41,130	40,070	28,610	27,820	24,470
Food grain	1,013,560	1,189,060	1,191,630	1,019,130	1,581,440	1,546,590
Rice	187,160	180,980	94,470	84,130	151,830	217,850
Corn (maize)	323,190	393,480	438,810	403,560	864,470	1,219,750
Soybeans	367,500	380,970	365,610	228,300	262,210	159,630
Fruit	101,360	125,710	135,365	102,880	78,700	na
Oranges	35,850	38,300	34,610	31,080	22,600	32,430
Apples	26,340	39,410	27,100	25,590	9,790	20,360
Walnuts, in shell	9,710	8,260	8,650	5,440	4,970	na
Walnut meat	24,870	23,510	27,160	18,500	19,280	24,320
Chestnuts	65,030	61,420	53,950	62,220	63,100	49,510
Sugar	90,560	62,040	161,400	229,910	120,650	620,050
Natural honey	53,750	37,020	56,140	71,710	61,390	80,060
Tea	362,490	401,970	420,790	412,710	376,060	361,890
Canned food	535,950	649,160	674,260	681,410	787,900	na
Pork	156,420	143,480	147,540	152,880	193,470	83,980
Vegetable	282,090	353,090	366,540	361,320	364,160	na
Fruit	59,940	58,730	51,710	53,250	76,670	na
Beer	13,580	20,640	25,180	19,570	25,920	31,900
Flue-cured tobacco	35,500	41,480	47,660	49,360	118,040	105,030
Goatskin	34,230	42,330	31,500	34,080	8,370	1,560
Furskin, raw	47,130	51,600	39,120	29,670	15,400	7,490
Mink skin	35,920	37,920	33,990	24,150	11,050	4,360
Raw silk	233,020	308,680	575,090	362,120	336,580	278,660
Cotton	756,100	718,850	431,150	300,540	360,960	210,590
Cashmere	127,760	190,610	194,540	141,740	163,860	na
Rabbit hair	156,420	230,390	137,320	96,800	105,220	110,250
Oilseeds, edible	272,490	260,260	248,460	352,200	448,470	279,600
Peanuts and shelled						
Peanuts	18,290	170,220	189,960	271,120	360,270	190,320
Vegetable oil	30,930	17,370	39,460	95,420	76,520	45,950
Cotton yarn	535,110	511,770	424,210	390,200	459,850	391,210

na = not available

Source: China's Customs Statistics, 1987-92.

Appendix table 7--China's major agricultural imports, by volume, 1988-92

Item	Units	1988	1989	1990	1991	1992
Food grain	1,000 tons	15,330	16,580	13,720	13,450	11,620
Wheat	1,000 tons	14,550	14,880	12,530	12,370	10,580
Barley	1,000 tons	80	245,580	652,429	751,910	na
Rice	1,000 tons	na	1,200	60	140	100
Corn (maize)	1,000 tons	110	70	370	--	--
Dried beans	1,000 tons	30	40	30	20	na
Soybeans	1,000 tons	150	0	0	--	na
Sugar	Tons	3,708,940	1,580,635	1,132,122	1,013,763	1,100,000
Coffee & coffee extracts	Tons	2,849	6,174	987	1,933	na
Cocoa beans	Tons	16,777	23,980	10,074	30,262	na
Natural rubber	Tons	362,150	410,668	355,414	306,161	270,000
Synthetic rubber	Tons	40,974	47,044	44,487	84,252	148,199
Logs	1,000 cubic meters	9,320	6,050	4,150	3,970	4,670
Cotton	Tons	34,773	519,039	416,733	370,524	280,000
Wool	Tons	187,377	101,368	33,329	106,243	208,995
Animal oil & fats	Tons	119,839	98,201	93,483	80,012	na
Edible vegetable oil	Tons	213,721	1,056,156	1,122,832	611,887	420,000
Other vegetable oil	Tons	480,135	781,940	1,189,692	1,091,734	650,000
Fertilizer, manufactured	Tons	14,706,323	13,933,013	16,275,945	18,175,189	18,590,00
Ammonia sulphate	Tons	78,507	71,450	163,607	253,203	na
Urea	Tons	8,492,246	7,940,709	8,146,840	7,005,128	7,480,000
Superphosphates	Tons	na	141,816	133,853	202,542	na
Potassium chloride	Tons	na	1,118,247	2,072,805	2,432,214	2,440,000
Compound fertilizer	Tons	na	964,647	4,629,397	7,033,791	6,540,000
Agricultural agent (chemicals)	Tons	34,142	36,591	28,487	31,211	na

na = not available.

Source: China's Customs Statistics, 1988-92.



Appendix table 8--China's major agricultural imports, by value, 1987-92

Item	1987	1988	1989	1990	1991	1992
U.S. \$1,000						
Food grain	1,754,020	1,895,540	2,990,700	2,352,850	1,642,740	1,705,020
Wheat	1,362,380	1,731,040	2,581,200	2,156,530	1,459,540	1,503,730
Barley	21,170	8,640	44,150	109,091	110,236	na
Rice	na	na	304,030	11,600	39,840	39,050
Corn (maize)	150,530	12,060	9,270	47,580	130	100
Dried beans	10,950	11,980	16,480	8,720	6,750	na
Soybeans	61,230	37,080	280	320	260	na
Sugar	297,440	858,240	429,780	378,880	256,270	255,300
Coffee/coffee extracts	12,860	17,550	17,970	63,200	6,770	na
Cocoa beans	38,570	34,880	35,500	11,900	34,840	na
Natural rubber	326,740	429,040	376,480	285,530	261,240	230,830
Synthetic rubber	50,960	59,190	54,690	66,860	127,970	176,090
Logs	na	899,760	601,860	460,560	454,310	495,540
Cotton	12,790	58,850	708,700	710,790	630,650	429,780
Wool	543,130	895,540	516,870	146,060	350,480	774,060
Animal oil & fats	40,680	50,370	39,930	37,660	29,150	na
Edible vegetable oils	186,040	94,820	498,310	528,270	289,090	195,010
Other vegetable oils	127,740	228,360	341,120	419,040	401,140	258,850
Fertilizer (mnfctd)	1,399,230	2,335,490	2,363,650	2,605,100	3,229,490	3,003,700
Ammonia sulphate	3,250	6,920	6,303	11,309	16,780	na
Urea	584,420	1,218,150	1,169,800	1,156,090	1,216,430	1,148,320
Superphosphates	na	na	24,010	22,980	32,860	na
Potassium chloride	na	na	138,230	243,100	294,242	279,820
Compound fertilizer	na	na	215,200	964,860	148,187	1,244,570
Agricultural agent (chemicals)	55,830	156,2701	196,200	177,140	183,144	na

na = not available

Source: China's Customs Statistics, 1987-92.

Appendix table 9--U.S. agricultural exports to China<sup>1</sup>

Item	Fiscal years				Calendar year			
	1989	1990	1991	1992	1989	1990	1991	1992
1,000 tons								
Wheat	8,332	3,825	3,650	4,226	7,401	3,692	4,378	2,985
Corn	0	442	0	0	302	140	0	0
Tobacco	437	133	0	0	0	133	0	0
Cattle hides, whole <sup>2</sup>	189	37	112	165	133	29	159	127
Soybeans	0	0	0	136	0	0	0	139
Cotton	186	191	209	172	196	183	227	133
Soybean oil	0	0	1	20	0	0	1	20
US \$ 1,000								
Wheat	1,225,371	544,030	331,901	370,551	1,108,656	497,348	363,339	273,723
Corn	0	48,560	0	0	33,527	15,033	0	0
Tobacco	2,491	938	0	0	0	938	0	0
Cattle hides, whole	7,791	1,831	4,954	7,597	5,410	1,245	7,196	6240
Soybeans	0	0	0	29,682	0	0	0	29,682
Cotton	233,981	289,742	300,581	240,643	259,144	277,213	318,794	185,943
Soybean oil	0	0	852	7,880	0	0	852	7,880
Others	26,489	23,899	31,421	34,368	26,371	22,236	32,277	41,164
US \$ million								
Total agricultural	1,496	909	668	691	1,435	814	722	545
Total nonagricultural	na	4,015	5,006	6,188	4,320	3,993	5,565	6925
Total	na	4,924	5,674	6,879	5,755	4,807	6,287	7,470

na = not available.

<sup>1</sup> U.S. domestic exports, f.a.s.-value basis. Exports include transshipments of agricultural products through Canada.

<sup>2</sup> Numbers in thousands.

Source: U.S. Bureau of the Census, "U.S. Agricultural Exports," country by commodity, monthly printouts; U.S. Department of Agriculture, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.

Appendix table 10--China's average \$U.S. exchange rate, 1984-92

	1984	1985	1986	1987	1988	1989	1990	1991	1992
RMB/\$US									
Average rate	2.3200	2.9367	3.4528	3.7221	3.7221	3.7651	4.7832	5.3234	5.5146

Source: IMF International Financial Statistics, various issues.



Appendix table 11--Major U.S. agricultural imports from China, by calendar year, 1988-92<sup>1</sup>

Item	1988	1989	1990	1991	1992
US \$ 1,000					
Meats and products, excluding poultry	380	272	137	239	1,064
Other meats, fresh or frozen	355	155	137	237	1,034
Poultry and products	31,729	40,408	39,383	43,691	45,191
Eggs	1,112	1,091	1,886	241	1,280
Feathers and down, crude	30,607	39,287	37,457	43,385	43,856
Hides and skins	3,625	74	770	695	481
Furskins	1,960	18	387	351	248
Wool, unmanufactured, apparel grades	4,621	3,511	1,497	1,017	773
Sausage casings	6,280	10,371	4,713	6,845	9,653
Silk, raw	4,744	11,097	7,455	5,420	2,439
All other animal products	20,987	18,085	12,692	11,103	13,278
Grains and feeds	5,079	8,057	6,995	8,760	10,556
Fruits and preparations	10,186	8,158	6,881	14,239	28,978
Fruits, prepared or preserved	10,169	8,021	6,802	14,122	28,787
Nuts and preparations	6,777	10,930	7,718	7,176	12,734
Vegetables and preparations	83,366	97,942	60,294	85,936	78,592
Vegetables, prepared or preserved	81,377	93,643	52,206	75,295	63,019
Mushrooms, canned	48,522	58,941	10,674	24,554	21,130
Waterchestnuts	17,082	15,267	15,168	17,327	15,799
Sugar and related products	6,166	9,575	10,584	19,011	26,874
Spices	6,048	7,159	4,960	2,660	5,243
Beverages	44,658	6,996	6,964	7,437	7,077
Coffee and products	153	135	94	26	0
Cocoa and products	13,994	8,578	11,572	13,545	20,685
Tea	20,169	21,699	23,385	25,837	29,035
Malt beverages	8,821	5,241	6,150	6,588	5,908
Oilseeds and products	6,884	3,976	3,217	3,054	3,447
Oilseeds and oilnuts	1,268	1,950	1,802	1,643	1,986
Oils and waxes, vegetable	4,112	1,997	1,407	1,380	1,441
Seeds, field and garden	3,525	6,733	9,968	14,722	11,125
Essential oils	19,321	13,924	16,782	18,095	21,724
Drugs, crude natural	8,522	10,133	15,083	11,559	14,539
All other vegetable products	10,967	4,964	5,217	5,303	7,425
Total agricultural commodities	279,531	319,233	270,620	327,930	378,776
Total nonagricultural commodities	8,231,369	11,669,032	14,966,672	18,647,870	25,350,324
Total imports	8,510,900	11,988,500	15,237,300	18,975,800	25,729,100

na = not available.

<sup>1</sup> Imports for consumption, customs-value basis.

Source: U.S. Department of Commerce, Bureau of the Census, "U.S. Agricultural Imports," country by commodity, annual printouts; U.S. Department of Agriculture, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.

Appendix table 12--China's calendar year grain trade, by country, 1985-91

Item	1985	1986	1987	1988	1989	1990	1991
	1,000 tons						
Net grain trade	-1,658	50	11,028	10,268	10,350	8,833	3,691
Total exports	7,717	7,442	5,206	5,094	6,209	4,850	9,721
Total imports	6059	7,492	16,234	15,362	16,559	13,683	13,412
Wheat imports	5,626	6,114	13,200	14,550	14,880	12,527	12,367
Argentina	875	534	810	304	1,049	858	391
Australia	1,214	2,616	4,432	397	1,677	1,386	1,364
Canada	2370	2,538	5,699	7,532	1,761	4,136	4,504
EC	324	145	566	30	1,594	2,143	1,242
United States	816	226	1,564	5,768	8,293	3,919	4,586
Flour imports	na	167	461	102	144	80	154
Hong Kong	na	0	5	7	7	15	26
Australia	na	2	45	0	1	0	0
Canada	na	75	167	33	17	0	43
EC	na	0	99	na	26	0	36
United States	na	1	1	3	4	1	2
Japan	na	85	112	57	84	60	43
Rice imports <sup>1</sup>	na	322	541	310	1,201	56	140
Taiwan	na	0	0	0	35	5	71
Burma	na	72	92	20	40	0	1
Korea, DPR	na	20	26	37	66	43	11
Thailand	na	230	316	253	1,002	5	49
United States	na	0	0	0	0	0	0
Coarse grain imports	120	787	1,752	190	314	1,020	751
Argentina	5	30	143	0	0	0	0
Australia	65	42	95	30	176	585	439
Canada	0	157	94	52	70	07	256
EC	0	0	0	0	0	0	0
Thailand	67	509	169	0	1	0	0
United States	0	32	1,239	107	54	356	31
Corn imports	80	588	1,541	109	68	368	0
Argentina	na	30	143	0	0	0	0
Australia	na	0	0	0	0	0	0
Canada	na	0	0	0	0	0	0
EC	na	0	0	0	0	0	0
Thailand	na	509	169	0	1	0	0
United States	na	32	1,228	107	54	356	0
Barley imports	40	199	211	81	246	652	751
Australia	na	42	95	30	176	585	439
Canada	na	157	94	52	70	67	256
EC	na	0	0	0	0	0	0
United States	na	0	11	0	0	0	31

continued--



Appendix table 12--China's calendar year grain trade, by country, 1985-91 -- continued

Item	1985	1986	1987	1988	1989	1990	1991
1,000 tons							
Total grain exports	7,717	7,442	5,206	5,094	6,209	4,850	9,721
Rice exports	1,019	950	1,022	698	314	325	688
Hong Kong	0	0	54	106	62	43	85
Iran	150	124	175	0	0	0	0
Macau	0	0	47	11	5	4	4
Sri Lanka	12	11	11	92	61	0	0
United Arab Emirates	132	82	10	6	5	9	4
Democratic Yemen	9	12	7	31	0	15	21
Benin	0	22	0	2	0	0	0
Angola	0	0	17	0	0	0	0
Guinea	0	21	0	19	15	0	16
Ivory Coast	0	81	109	0	0	0	15
Libya	30	41	31	20	20	0	49
Mauritius	37	50	51	54	47	42	80
France	46	11	0	0	0	0	0
Bulgaria	10	10	21	0	8	10	0
Czechoslovakia	50	41	41	30	20	30	0
German, DR	20	30	24	20	10	5	0
Poland	70	60	75	60	15	0	8
Romania	30	30	50	21	10	31	0
Switzerland	162	0	32	24	0	0	0
Brazil	3	70	0	0	0	0	0
Cuba	50	100	101	50	10	25	138
Peru	0	49	93	0	0	0	0
Indonesia	0	0	na	na	na	46	20
Coarse grain exports	6,698	6,492	4,184	4,396	4,515	4,525	9,033
Corn exports	6,340	5,640	3,916	3,912	3,502	3,404	7,782
Korea, DPR	123	127	89	165	296	246	216
Hong Kong	1,046	761	218	238	116	60	167
Japan	2,461	2,709	1,600	1,504	1,289	918	1,785
Malaysia	14	0	20	144	182	112	454
Philippines	130	177	61	0	32	36	19
Singapore	289	16	42	172	127	59	233
Iran	0	0	0	0	0	60	333
Poland	104	104	104	0	0	0	0
Russia	1,605	1,603	1,720	1,447	1,183	na	855
Mexico	0	41	24	0	0	0	18
Republic of Korea	0	0	na	na	na	931	3,494
Other grain exports: <sup>2</sup>	358	852	268	484	1,013	1,121	1,251

na = not available.

<sup>1</sup> Only imports of semi-milled or milled rice.<sup>2</sup> Includes millet, sorghum, buckwheat, broad bean, red bean, meng bean, kidney bean, and other beans.

Source: China's Customs Statistics, 1985-91.

Appendix table 13--China's calendar year trade in other agricultural commodities, by country, 1985-91

Item	1985	1986	1987	1988	1989	1990	1991
Tons							
Imports:							
Cotton	163	187	5,976	34,773	519,039	416,733	370,524
Pakistan	na	0	1,948	20,166	144,342	29,084	31,149
Egypt	na	0	3,822	1,986	1,284	1,319	0
Sudan	na	0	200	5,113	34,147	41,445	4,506
United States	na	0	1	940	227,908	210,175	229,252
Sugar	1,908,721	1,182,491	1,826,814	3,351,393	1,580,635	1,132,122	1,013,764
Australia	na	423,101	408,682	425,750	196,411	142,464	105,508
Cuba	na	430,679	396,415	1,350,261	794,097	868,406	738,333
Thailand	na	245,384	678,375	799,242	322,418	74,409	122,661
United States	na	30	177,164	0	451	574	115
Philippines	na	30	15,900	0	23	0	0
Exports:							
Cotton	347,026	558,089	754,576	468,002	272,483	167,282	199,980
Hong Kong	na	157,822	189,551	61,353	24,823	2,279	5,579
Indonesia	na	51,607	57,311	42,740	17,677	16,573	33,118
Japan	na	103,171	183,194	142,7894	63,324	47,308	50,511
USSR	na	43,714	43,862	7,322	29,579	25,216	0
Thailand	na	17,747	36,434	14,381	17,336	11,635	10,238
Soybeans	1,151,000	1,368,205	1,710,141	1,477,324	1,247,648	940,340	1,108,983
Hong Kong	37,900	9,108	16,107	39,425	16,503	11,511	10,238
Indonesia	201,300	260,413	273,785	308,252	162,405	278,693	455,169
Japan	345,500	343,410	296,833	299,484	297,732	278,227	280,540
Malaysia	79,600	150,308	126,446	120,799	125,252	54,164	240,424
Singapore	4,400	19,916	31,731	57,393	17,090	4,706	7,896
USSR	388,400	448,506	816,343	509,762	499,967	221,199	7

Source: China's Customs Statistics, 1985-91.

Appendix table 14--China's other agricultural output, 1985-92

	1985	1986	1987	1988	1989	1990	1991	1992
1,000 tons								
Sugar crops	60,468	58,525	55,503	61,874	58,038	72,145	84,187	88,080
Sugarcane	51,549	50,219	47,363	49,064	48,795	57,620	67,898	73,011
Sugarbeets	8,919	8,306	8,140	12,810	9,243	14,525	16,289	15,069
Tobacco	2,425	1,707	1,943	2,734	2,830	2,627	3,031	na
Flue-cured	2,075	1,374	1,636	2,337	2,405	2,259	2,670	3,119
Tea	432	461	508	545	535	540	542	560
Jute and hemp <sup>1</sup>	2,060	710	569	540	660	726	513	619
Silk cocoons	336	336	354	394	488	534	584	673
Aquatic products	7,052	8,235	9,550	10,610	11,520	12,370	13,510	15,570
Rubber	188	210	238	240	243	264	296	309
Fruit	11,639	13,477	16,679	16,661	18,319	18,744	21,761	24,401

na = not available

<sup>1</sup> Hemp data are on a processed basis (conversion is 2kg raw equals 1kg processed).

Sources: 1992 Statistical Yearbook; and 1993 China Statistics Abstract.





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